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Supreme Court, U.S.
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No._____

In The
Supreme Court of the United States

MERLIN E. CARLSON, JR.

Petitioner,

v.

GENERAL ELECTRIC COMPANY, a foreign corporation; KAISER ALUMINUM AND CHEMICAL CORPORATION, a foreign corporation,

Respondents

On Petition for Writ Of Certiorari to the United States Court of Appeals for the Ninth Circuit

PETITION FOR WRIT OF CERTIORARI

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303 pgs

QUESTIONS PRESENTED FOR REVIEW

By operation of *Weisgram v. Marley Co.*, 528 U.S. 440, 120 S. Ct. 1011; 145 L. Ed. 2d 958 (2000) and *Joiner vs. General Elec. Co.*, 522 U.S. 136, 118 S.Ct. 512 (1997) post-trial are the earlier rulings of the trial court on the admission of expert witness testimony the "law of the case" absent a finding by an appellate court that trial court abused its discretion in admitting the expert opinion?

In accordance with *Weisgram v. Marley Co.*, 528 U.S. 440, 120 S. Ct. 1011; 145 L. Ed. 2d 958 (2000) and *Joiner vs. General Elec. Co.*, 522 U.S. 136, 118 S.Ct. 512 (1997) do a subsequent district court and the appellate court absent an abuse of discretion by a trial court lack authority to judicially negate the trial court's ruling that an expert witness was competent to testify and the jury's verdict is based upon sufficient evidence?

In a mutli-plaintiff action is it a violation of the Fifth Amendment, U.S. Constitution, to invoke the "law of the case doctrine" to an individual plaintiff, who the court previously held was lacking in the jurisdiction standing to appear before that court in earlier proceedings?

Under the guidelines of *Daubert v. Merrell Dow*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed 469 (1993) is the differential diagnosis process sufficiently scientifically reliable for evaluating whether a particular witness' is competent to offer expert witness opinions?

When it has been established to be medically unethical to test a hazardous chemical on humans to establish levels at which risk of injury or death occur, is it a denial of the Seventh Amendment to require expert testimony based upon published peer reviewed studies rather than or in an addition to expert testimony predicated upon the differential diagnosis process?

Absent an abuse of discretion may an appellate court trump a trial court's finding that a reliable differential diagnosis provided a valid foundation for an expert opinion on causation by holding there was insufficient peer reviewed scientific literature on the particular scientific topic under a *Daubert v. Merrell Dow,* 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed 469 (1993) analysis?

When a jury has reached a verdict under a Fed. R. Civ. P. 49(a) verdict and the trial court has determined that there is sufficient proof to prove at least one of a parties theories of liability is it a violation of the Seventh Amendment, U.S. Constitution, for a later trial court to make a finding as a matter of law that the same prior prove claim should be dismissed as a matter of law?

LIST OF PARTIES

Petitioner is Merlin E. Carlson, Jr., who is a Plaintiff in District Court and an Appellant in Court of Appeals.

Respondents are General Electric Company and Kaiser Aluminum and Chemical Corporation, who were Defendants in District Court and Respondents in Court of Appeals.

David Schudel, Timothy Schudel, Sandra Schudel, Daniel Glass, Craig Thompson, Kathrene Froese, Deborah Williams (Guargana), John Hopkins and Ruth Hopkins were Plaintiffs in District Court and in related appeals Appellants in Court of Appeals.

LIST PURSUANT TO RULE 29.6

According to the prior corporate disclosure statement General Electric Company is a publicly held corporation with no parent companies. Its subsidiaries and affiliates are General Electric Capital Corporation; General Electric Credit International, N.V.; Montgomery Ward and Company, Inc.; General Electric Capital Preferred Asset Corporation; CAMCO, Inc. (Canada); General Electric Capital Services, Inc.; GECC Financial Corporation (Hawaii); General Electric Capital Canada, Inc.; GNA Corporation; Mercer Bank (Austria); Imaging Financial Services, Inc.; Dart V. Kraft, Leasing Corporation, NBC Internet, Inc., Credit DeL'Erst, Finax 1st Home Federal Savings and Loan Association of the Carolinas, F.A.A.B., GE Capital Aviation Services, Ltd., GE Capital Mortgage Services, Inc., GE (NZ) Ltd. (New Zealand), GE Capital PTY LTD (Australia), Gate Finance Corporation, General Electric Capital Canada, Inc., Outlet Broadcasting, Inc. and Service Bank GmbH.

LIST PURSUANT TO RULE 29.6 — Continued

Kaiser Aluminum and Chemical Corporation is a wholly owned subsidiary of Kaiser Aluminum Corporation. Kaiser Aluminum Corporation has equities securities which are publicly held. Kaiser Aluminum Corporation's parent, Maxxam, Inc., has debt and equity securities which are publicly held. Maxxam, Inc.'s affiliates with either publicly held equity or debt securities are Maxxam Group, Inc.; the Pacific Lumber Company; Scotia Pacific Holding Company; and Sam Houston Race Park, Ltd.

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PETITION FOR WRIT OF CERTIORARI

Merlin E. Carlson, Jr., Petitioner herein, respectfully pray that a Writ of Certiorari issue to review the judgment and opinions of the United States Court of Appeals, Ninth Circuit, entered on May 10, 2002.

The Ninth Circuit's rulings below are appropriate for this Court's consideration for several reasons. The Ninth Circuit's decision: (1) conflicts with several decisions of another United States Court of Appeals on the same important federal matter; (2) the decision conflicts with substantive state law on the burden of proof for causation. The important matter involved the above include: (1) whether the "law of the case" doctrine can be applied to a plaintiff in a multi-plaintiff action, where the court previously declined appellate jurisdiction; (2) where without due process of law the court imposed a judicial determination on a right that the court previously declined to hear the party due to a lack of appellate jurisdiction; (3) may a subsequent district court overrule a substantive post-trial ruling of a prior trial court; (4) under *Daubert v. Merrell Dow* 509 U.S. 579 (1993) is the differential diagnosis process scientifically reliable.; (5)when considering a Rule 50(b) motion, may the district court resurrect sub-issues that have been waived pursuant to Rule 49(a) and (6) after applying *Joiner vs. General Elec. Co.*, 522 U.S. 136, 118 S.Ct. 512 (1997) to the trial court decision to admit expert testimony should Petitioner's jury verdict that was previously found to be based upon sufficient evidence be reinstated with interest in accordance with *McCord v. Maguire*, 873 F.2d 1271, 1274 (9th Cir. 1989).

The Ninth Circuit decision also represents a departure from the usual course of judicial proceedings by holding a party only presented proof of two scientific articles to support expert opinions when in fact there are scores of references to and copies of scientific articles in the court record.

OPINIONS BELOW

The judgments rendered at the trial court level and rulings by the trial court which give rise to the appeal to the Ninth Circuit are the Rule 49(a) special Verdict [62a], the Judgment of July 13, 1994 [59a], (as applied to Petitioner Carlson), pertinent portions of trial court ruling of November 25, 1994 [21a], The opinion of the United States Ninth Circuit Court of Appeals that gives rise to this petition is *Carlson. v. General Electric Co.,* 2002 U.S. Lexis 9184 (9th Cir. 2002) [1a] and The opinion of the United States Ninth Circuit Court of Appeals that gives rise to this petition is *Schudel, et al. v. General Electric Co.,* 120 F.3rd 991 (9th Cir. 1997)[5a].

JURISDICTION

This action was commenced on September 30, 1991, in the Spokane County, Washington Superior Court. It was removed by Defendants General Electric and Kaiser Aluminum (hereinafter collectively referred to as GE, if not otherwise stated) to the Federal District Court, Eastern District of Washington, based upon diversity of citizenship under 28 U.S.C. § 1332(a)(i). Following a 54-day jury trial before Judge Fred Van Sickle, judgment was entered on July 13, 1994, in favor of Carlson. [54-a]. GE filed its motion for judgment as a

matter of law pursuant to Fed. R. Civ. P. 50(b) (hereinafter "Rule 50") and alternative motion for a new trial under Fed. R. Civ. P. 59 (hereinafter "Rule 59") on July 27, 1994. GE did not file a Notice of Appeal challenging the July 13, 1994, judgment.

November 25, 1994, the trial court *sua sponte* granted a new trial. On December 21, 1994, Carlson appealed to the Ninth Circuit Court of Appeals under 28 U.S.C. § 1291. The Ninth Circuit Court of Appeals declined to accept appellate jurisdiction of Carlson's appeal. Appellate jurisdiction was taken of other plaintiffs. The Ninth Circuit issued its opinion declining appellate jurisdiction on July 23, 1997. *Schudel, et al. v. General Electric, Co.,*120 F.2d 991 (9th Cir. 1997). Thereafter, on November 24, 1997, the Ninth Circuit denied Carlson's timely filed motion for rehearing and suggestion for rehearing *en banc*. On February 23, 1997, Carlson filed a Petition For Writ Of Certiorari No.97-1410. April 27, 1998, the Certiorari was denied. Carlson then remanded to district court proceed towards trial. On September 25, 1998, Judge Van Sickle recused and Judge Alan M. McDonald was assigned. On March 15, 1999, Carlson's claim was summarily dismissed with no Rule 54(b) certification granted. On October 5, 1999, a final judgment was entered. On November 1, 1999, Carlson filed a Notice of appeal. The Ninth Circuit issued a memorandum affirming the trial court on May 10, 2002.

Pursuant to Supreme Court Rule 13.1 and 13.3, this petition for certiorari has been filed within 90 days of the memorandum decision. This Court has jurisdiction pursuant to 28 U.S.C. § 1254(1).

CONSTITUTIONAL PROVISIONS, STATUTES, AND COURT RULES INVOLVED

Due to the lengthy nature of the materials, the full text of the following Constitutional provisions, statutes and court rules are set forth in Appendix D:

U.S. Constitution Fifth Amendment

U.S. Constitution Seventh Amendment

Fed.R.Civ.P. 50(a)(b) 1991 version

28 U.S.C. § 2072

STATEMENT OF FACTS AND PROCEDURAL HISTORY

A. Background Facts.

Kaiser Aluminum Chemical Corporation worked with General Electric Company to clean-up twenty-five years of Polychlorinated biphenyls (herein "PCBs") contamination at the site known as Trentwood. (Herein both Kaiser Aluminum and General Electric will be collectively referred as "GE" unless otherwise stated.) GE planned and did use known federally and state regulated hazardous chemicals to remove the PCBs.

In October 1988 Merlin E. Carlson, Jr., was working for Qualified Personnel, Inc., (herein "QPI") at Trentwood. Through GE's negligence Carlson was repeatedly exposed to 5 to 10 times the permissible exposure limits of numerous hazardous chemicals. He was injured by the repeated negligent exposures.

Independent of this litigation Washington's

occupational epidemiologist, Dr. Samuel Milhem, Dr. Peter Houck from the Center of Disease Control, and Spokane County Health Department investigated the incident.[1] The investigators examined the work site and determined what and how hazardous chemicals[2] were used. Investigators referred the exposed workers to local physicians for further testing and treatment. After completing the investigation and medically following the exposed persons for years, the investigators published part of their medical findings in a peer-reviewed scientific journal.[3]

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[1] Originally, the health department was investigating Legionella outbreak in a GE supervisor. When multiple workers presented with signs of poisoning the Dr. Milhem was called into investigate the occupational poisoning. [127a-142a]

[2] The hazardous chemicals were principle two types — organic solvents and caustic detergents. Among many other chemicals Trichoroethane (TCA); Perchoroehtylene (PERC); Naphthalene; Trimethylbenzenes; 1,2,4-Trimethylbenzene (Xylene); Sodium Hydroxide; Aryl Sulfonate; Phosphate; Silicates; Chelate (EDTA-type); Alkyl aryl polyether; Phosphate ester; Sodium Tripolyphosphate; Surfactant Nonylphenoxpoly; Mono and Diakly Acid Phosphate; Ehylene gycol; Monobutyl ether; Cycohexanal; Monoehanolamine; C9-C12 Paraffins and C9-C12 Cycloparaffins were used. These hazardous chemicals were being mixed with other chemicals such as "409" and "Wiley's" driveway cleaner, then put in 409 spray bottles.

[3] *Organic Solvent Encphalophathy: An Old Hazard Revisited,* Am. J. Ind.Med. Vol. 22 (1992). [179a-89a]

Carlson is described in the journal article. After the toxic exposures, Carlson was a completely different person. He has persistent problems with impaired memory, confusion, significant depression, profound personality change and headaches. Medically the problems are so profound he is no longer able to live independently. [258a-264a]

Multiple expert and lay witnesses testified about GE's negligence. Dr. Daniel Goldstein, M.D. testified that more probably than not Carlson had been permanently injured by his toxic exposure to hazardous chemicals including organic solvent mixtures. [228a-229a] Former employers, teachers, friends, family and the tribal chief testified as to Carlson's abilities and nature before and after the negligent poisoning. After a three month trial the jury found (1) GE negligent; (2) the negligence was a proximate cause of injury to him; (3) Carlson was not a "loaned servant"; and (4) damages were $2,775,768.00. [26a-27a]

B. Procedural Background.

On September 30, 1991, Carlson and nine other plaintiffs filed a complaint for negligence in the Spokane Superior Court of the State of Washington. On February 25, 1992, GE had the action removed pursuant to 28 U.S.C. § 1446(a).

Carlson's only "claim" was of negligence. He had met multiple theories of damages. Pre-trial there were extensive "*Daubert*" hearings.[4] The court ruled that the medical expert witness could testify based upon the differential diagnosis process.

Before deliberations, the parties and the district court had five-day instruction conferences. A Rule 49(a) special verdict with questions was submitted. The special verdict addressed each essential elements of a negligence and GE's affirmative defense of "loaned servant." GE and Kaiser did not object to the special verdict form and questions.

After a two-week deliberation, verdicts were returned in favor of all plaintiffs. Before the jury was dismissed neither GE nor the district court proposed that the jury be required to make further or additional Rule 49(a) findings.

On July 13, 1994, a judgment for Carlson for $2,775,768.00 was entered. On July 27, 1994, GE served on Carlson's attorneys Rule 50(b) and 59(b) motions. GE did not move for a new trial based upon a claimed error in the special verdict.

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4 This trial was to occur shortly after the decision *Daubert v. Merrell Dow,* 509 U.S. 579 (1993). Carlson's expert witnesses filed extensive offers of proofs with multiple attachments supporting their methodology from peer-reviewed published scientific textbooks and journals. For clarity the Offers of Proof for Drs. Goldstein, Morton, Lantsberger, Milhem, Cripe and Beaty. [90a-190a] are reproduced, and for brevity voluminous exhibits in original are not included

On November 25, 1994, 161 days after the verdict, the district court amended Carlson's judgment. The court ruled that there was sufficient evidence to support the jury findings of negligence, loaned servant and Carlson's neurological damages. The court then *sua sponte* ordered a new trial for a second jury to answer sub-issues of what damages were due to neurological and non-neurological conditions. The order was the first notice on the court's *sua sponte* motion for a new trial for previously waived issues.

On December 9, 1994, Carlson moved for Fed.R.Civ.P. 54(b) findings on the November 25, 1994, Order. Carlson submitted a lack of "jurisdiction," asserting that the trial court lacked jurisdiction to grant a new trial and citing to multiple authorities.[5]

In the Court of Appeals Plaintiffs and GE moved under Fed.R.App.P. 27.11 for remand for lack of jurisdiction. On March 24, 1995, the Court of Appeals denied all motions. In denying GE's motion to remand, the court cited the Fed.R.Civ.P. 54(b) certification and *Freeman v. Hittle,* 747 F.2d 1299 (9th Cir. 1984). On July 23, 1997, the Court of Appeals issued its opinion, ruling that the new trial order was interlocutory and not immediately appealable. [50-51a]. On August 6, 1997, Carlson petitioned for rehearing. On November 24,

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5 *Phillips v. Negley,* 117 U.S. 665 (1886); *Eaton v. National Steele Products,* 624 F.2d 863 (1980); *McCord v. Maquire,* 873 F.2d 1271(9th Cir. 1989);

Stradley v. Cortez, 518 F.2d 448 (Cir. 1975); *Peterman v. Chicago, Rock Island & Pacific RR Co.,* 493 F.2d 88(8th Cir), cert. denied, 417 U.S. 947 (1974)

1997, the Court of Appeals entered an order denying the petition. [52-53a].

ARGUMENT FOR GRANTING THE WRIT

I. In Multi-plaintiff Litigation Application of "The Law Of The Case Doctrine" To One Plaintiff Who The Court Has Previously Declined Appellate Jurisdiction Is A Denial Of Due Process Of Law

Mr. Carlson was denied a jury trial and due process by the Court of Appeals' and the second district court's unreasonable application of the "law of the case" doctrine. Review of this departure for the "law of the case" doctrine so far departs from the established law of the body of circuit law and this Court, *Carlson vs. General Electric Co.* calls for the exercise of this Court's supervisory authority. In light of *Weisgram v. Marley Co.*, 528 U.S. 440, 120 S. Ct. 1011; 145 L. Ed. 2d 958 (2000) it is utmost urgency that this Court make clear just "what" the law of the case means in the context of *Daubert v. Merrell Dow,* 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed 469 (1993)[6] and multi-plaintiff litigation.

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[6] Hereinafter referred to as *Daubert.*

In *Messenger v. Anderson,* 225 U.S. 436, 444, 32 S. Ct. 739, 740, 56 L. Ed. 1152 (1912)) this Court stated:

> In the absence of statute, the phrase "law of the case," as applied to the effect of previous orders on the later action of the court rendering them in the same case, merely expresses the practice of courts generally to refuse to open what has been decided -- not a limit to their power.

The "law of the case" doctrine seems straight forward. Yet, in the 1999 *Schudel* appeal GE and Kaiser argued that *Weisgram v. Marley Co.,* stood for the proposition that the *Schudel* appellate court decision rather than the first district court's ruling on *Daubert* and sufficiency of the evidence was "the law of the case"[7]. If *Weisgram* is a "law of the case" decision rather than one confined to appellate jurisdiction to make final a Rule 50 ruling, then in mutli-plaintiff litigation there is a *due process* problem for plaintiffs situated as Mr. Carlson is here.

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[7] Mr. Carlson submits, this *Weisgram* tact was to avoid an obvious conflict for General Electric Co. The Respondent argued in *Joiner vs. General Electric Co.* that the appellate court is to defer to the trial court's *Daubert* findings absent an abuse of discretion. Meanwhile General Electric Co. argues in *Schudel* that the appellate court has authority to second guess the trial court's *Daubert* considerations, reach a different decision on admissibility and ignore the abuse of discretion standard of review.

"The law of the case doctrine is a judicial invention designed to aid in the efficient operation of court affairs." *Milgard Tempering, Inc. v. Selas Corp. of America*, 902 F.2d 703, 715 (9th Cir. 1990). The doctrine does not apply to matters that the court has not previously decided. The law of the case doctrine only precludes those issues actually decided. *Kirkbride v. Continental Casualty Co.*, 933 F.2d 729, 732 (9TH Cir. 1991)(the doctrine did not apply when the court previously rejected considering the matter on appeal.)

Schudel (Carlson) vs. General Electric Co. 120 F.3d 991 (9th Cir. 1997) held the court lacked appellate jurisdiction and explicitly declined to consider the merit of Mr. Carlson's case. See 120 F.3d at p. 994. In this multi-plaintiff action the *Schudel* Court either had appellate jurisdiction or did not to hear Mr. Carlson. Under the circumstances it is an extreme departure from due process for the a second Appellate bench in the same case to later decide that Mr. Carlson's claim was decided in the first appellate proceedings, because the retrospectively the first court had appellate jurisdiction. Mr. Carlson's circumstances illustrates why this departure from "the law of the case" doctrine is so worrisome for multi-plaintiff litigation.

In 1997, Mr. Carlson's case was factually and procedurally different from the other plaintiffs. The differences are multi-faceted. The first difference is that Mr. Carlson lost consciousness when using organic solvents. [231a]. None of the other plaintiffs had proof of loss of consciousness, while using the organic solvents. The agreed scientific knowledge is that:

> "[T]he literature validates only two scenarios from which an encephalopathy may result from exposure to certain solvents: (1) when an individual sustains chronic exposure to the solvent over a decade or more years; or (2) when an individual sustains a severe acute exposure to a very high level of solvent, **and suffers an accompanying loss of consciousness**...." (Emphasis added.). [92a].

The foregoing quote originated with GE's and Kaiser's citation to a sole publication by a physician that it presented during the *Daubert* hearing. GE and Kaiser knew Mr. Carlson's trial proof was that he had "passed out", while working with the solvents. Culling Mr. Carlson's claim from the other plaintiffs removed from the *Schudel* Court's consideration this agreed upon scientific proof as to the other plaintiffs. Trial tactics such as this would not be an unusual occurrence in multi-plaintiff litigation.

A second distinction is that Dr. Goldstein used the differential diagnosis process to arrive at his causation opinion as to Mr. Carlson. [90a-106a]. Dr. Goldstein reviewed all of Mr. Carlson's health history from birth forward, *e.g.* 102a ¶ 48, 104a-106a, 229a. He reviewed not only Mr. Carlson's records, but also those of Dan

Skeman[8]. [92a]. On the other hand, Dr. Goldstein did not engage in the differential diagnosis process with any remaining plaintiff; he did not review the health history or medical records of any of the other plaintiffs. He expressed no direct opinion as to any other plaintiff.

The third key difference is that the trial judge Hon. Fred Van Sickle found Dr. Goldstein's opinions based upon the differential diagnosis process "reliable" under a *Daubert* analysis. Post-trial Judge Van Sickle allowed Dr. Goldstein's testimony to stand. Judge Van Sickle ruled that Mr. Carlson had sufficient proof of his neurological injury. Given that it was Dr. Goldstein, who ultimately proved the medical causation testimony of Mr. Carlson's neurological injury, the post-trial rulings of Judge Van Sickle are controlling of his claim. Since in a Fed. Civ. R. Proc. 50 ruling, after applying *Joiner* to the trial court's decision of admissibility, Dr. Goldstein's opinion on the probability of Mr. Carlson's injury the finding of sufficient of proof on one theory of a negligence claim disposes of all the issues. See *McCord v. Maguire*, 873 F.2d 1271, 1274 (9th Cir. 1989).

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[8] Mr. Skeman was a co-worker, who also lost consciousness. Six weeks before working at the PCB clean up, Mr. Skeman had a complete pre-employment history, physical exam and laboratory testing. Dr. Lantsberger and other physicians compared vast amount of objective before and after exposure data on Mr. Skeman. He was like a human guinea pig due the fortuitous employment examination and later exposure. He was "culled" from this multi-plaintiff dispute with an early resolution of his claim.

A fourth distinction is the record of whose claim Dr. Goldstein used the differential diagnosis process. For Mr. Carlson a record existed for appellate review. Riding on Mr. Carlson's coattails, the other plaintiffs proceed towards verdict and appeal *vis-a-vis* Dr. Goldstein with nothing more than an argument that a parties is entitled to the benefit of any other party's evidence. It was not surprising the *Schudel* Appellate Court found as to the other plaintiffs, Dr. Goldstein failed to establish he was competent to express an opinion in their cases. On the other hand, given the extensive offer of proof that was made by Dr. Goldstein as to his causation opinions about Mr. Carlson, and Judge Van Sickle's finding that the differential diagnosis process was reliable, it is surprising and error for a reviewing court to find this witness incompetent as to Mr. Carlson's individual claim.

There will always be distinctions between individual plaintiffs in multi-plaintiff litigation. Likewise, there will always be vexing battles over *Daubert* and causation proof. If *Weisgram* standing for the "law of the case doctrine" is added to the mix, there will always be a profound lapses due process for some plaintiffs in multi-plaintiff litigation. These simple truths further support that in the interest of overall judicial economy this review for certiorari should be granted.

The Ninth Circuits *Carlson vs. General Electric Co.* decision is in direct conflict and thwarts the rationale that allowing this judicial discretion to apply the "law of case" doctrine. The doctrine is grounded in the need for litigation to come to an end. *Disimone v. Browner*, 121 F.3d 1262, 1266 (9th Cir. 1997). However, this does

not mean the doctrine is applied at the expense of a litigant's due process rights as happened here.

Here, the Court of Appeals ruled Mr. Carlson could not be heard in the 1995 appeal. Then in the 1999 appeal the Ninth Circuit Court of Appeals held in the interest of judicial economy, *i.e.* the "law of the case", not to consider an appellate issue because the court had already addressed the matter, when it declined the earlier appellate jurisdiction. That is, judicial economy of the utmost efficiency—decide appellate issues without the aggrieved party's presence. This judicially derived method of judicial economy as applied by the *Carlson* Court is in direct conflict with the Fifth Amendment, U.S. Constitution. Mr. Carlson has been deprived of his right to recover his loss form the established wrongful conduct of GE and Kaiser without due process of law.

II. In The Interest Of Judicial and Litigant Economy The Reliable Scientific Process of Differential Diagnosis Should Be Affirmative As An Acceptable Means For Analyzing Proffered Expert Opinions Under a *Daubert v. Merrell Dow,* 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed 469 (1993) Analysis

The *Daubert* originated in the Ninth Circuit. It has been nine years since the decision. There are over 5000 federal cases that cite *Daubert.* In the federal system alone there is obviously a vast difference of opinion between not only the different panels of the Ninth Circuit, but a vexing debate amongst the judicial bench writing opinions in other circuits as well, concerning

how *Daubert* was meant to influence the admissibility of expert witness opinions. Mr. Carlson proposes any help in streamlining the proceedings surrounding *Daubert* are should be welcome by litigants and the bench. Over the last nine years the majority has reached consensus on one avenue to streamline *Daubert* proffers and challenges.

The majority of the circuits have acknowledged and accepted an appropriately applied differential diagnosis process as an acceptable methodology to support expert opinions. *Baker v. Dalkon Shield Claimants Trust,* 156 F.3d 248 (1st Cir. 1998); *Zuchowicz v. United States,* 140 F.3d 381 (2nd Cir. 1998); *Heller v. Shaw Industries, Inc.,* 167 F.3d 146 (3rd Cir. 1999); *Kannankeril v. Terminix International, Inc.,* 128 F.3d 802 (3rd Cir. 1997); *Westberry v. Gislaved Gummi Ab,* 178 F.3d 257 (4th Cir. 1999); *Moore v. Ashland Chem., Inc.,* 151 F.3d 269, 277-79 (5th Cir. 1998) (en banc), cert. denied, 526 U.S. 1064, 143 L. Ed. 2d 541, 119 S. Ct. 1454 (1999); *Hardyman v. Norfolk & Western Ry. Co.,* 243 F.3d 255 (6th Cir. 2001); *Hose v. Chicago Northwestern Transportation Co.,* 70 F.3d 968 (8th Cir. 1995); and *Hollander v. Sandoz Pharms. Corp.* 289 F.3d 1193 (10th Cir. 2002).

Cited as authority for accepting the differential diagnosis process is *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 758 (3d Cir. 1994) where the Court observed:

> "Differential diagnosis generally is a technique that has widespread acceptance in the medical community, has been subject to peer review, and does not frequently lead to incorrect results[;] it is a method that involves assessing causation with respect to a particular individual. As a result, the steps a doctor has to take to make that (differential) diagnosis reliable are likely to vary from case to case . . . . (Parenthetical in original).

Through out the accepting circuits have jurisdictions that have acknowledged the role and reliability of the differential process. *Hardyman,* 265 and also *Westberry,* 266. The Ninth Circuit has not reached the point of acknowledging the reliability and inherent judicial efficiency the differential diagnosis process. The decision in *Schudel,* 120 F.3d 991 and the present *Carlson vs. General Electric Co., et al* are examples of the resistance of the Ninth Circuit to endorse the reliability of differential diagnosis process.

Here, Mr. Carlson's expert witnesses all utilized the differential diagnosis process in arriving in a scientific manner at their respective opinions. In 1994, the first *Schudel* trial court found the differential diagnosis process as not only scientifically reliable under a *Daubert* analysis, but the trial court tracked through the through trial into the post-trial motions. A head of his time, Judge Van Sickle focused the admissibility of Dr.

Lantsberger's opinions for an appropriate application of differential diagnosis process much as the trial court did in *Heller v. Shaw Industries, Inc.,* 167 F.3d 146 (3rd Cir. 1999). As the *Heller* Court did, Judge Van Sickle used the framework of the differential diagnosis process to determine that portions of Dr. Lantsberger's opinions were not scientifically competent under *Daubert.*

Despite the logic, reliability and efficiency of the differential diagnosis process and *Daubert* inquiries the *Schudel* and *Carlson* appellate courts have ignored the differential diagnosis process. *Schudel* and *Carlson* reflect the Ninth Circuit tendency to look at whether peer reviewed scientific articles provide support for an expert witness's opinions. This obsession with evaluating the reliability of an expert witness's opinions based upon the number of scientific articles is consuming the time of the trial bench and litigant's counsels for little appreciable return on the time invested.

Mr. Carlson submits Judge Van Sickle did not abuse his discretion in finding the differential diagnosis process was scientifically reliable. On the other hand, the *Schudel* Court in holding as a matter of law that there were only two studies supporting Dr. Goldstein's and Dr. Morton's is utterly without foundation. Here the matter in question is the subject of an independent of litigation peer reviewed journal. [79a-89a]. In light of the foregoing fact it makes no sense for the *Schudel* Court to hold as a matter of law there were only two scientific articles. It is also socially dangerous.

It is undisputed that independent of the litigation the State of Washington's Occupational Epidemiologist and a physician from the CDC published in peer reviewed scientific journal their investigation and findings about the incident that involved Mr. Carlson. Dr. Milham and Dr. Houk independent of this litigation determined he suffered a neurological injury due to his exposure to these known toxic chemicals. The title of article is telling— *Organic Solvent Encephalopathy: An Old Hazard Revisited.* (Herein Milham Article) [79a-89a]. This scientific publication is unquestionably on point in this litigation on the state of scientific knowledge about organic solvents. The Introduction to the Milham Article begins with "Protecting workers against the effects of organic solvent exposure has been an occupational health priority **because these compounds can cause neurologic damage** [Morrow et al., 1990] and death [Browning, 1965]. . ." (emphasis added) The Milham Article list 25 scientific publications as references. [87a-89a]. There was no record before the Ninth Circuit that this particular publication by Drs. Milham and Houk was scientific flawed.

Dr. Milhem used the differential diagnosis process in arriving at his opinions. [127a-142a]. The *Schudel* and *Carlson* Courts have paid this no mind. It creates chaos and distrust in the judicial process when such an astounding disregard of independent scientific trumps what was otherwise a systematic and reasonable approach to a *Daubert* analysis. The Ninth Circuit Court of Appeals reluctance to recognize the differential diagnosis process as herein demonstrated leaves the district court bench and litigants with

cumbersome and unpredictable problem.

What the Ninth Circuit has concluded about organic solvents, including TCA and PERC, is socially dangerous. This essentially a judicial discounting of governmental investigation and control of hazardous chemicals is a notably reason why this writ for certiorari should be accepted. Mr. Carlson points out the following in light of the foregoing.

The poisoning of more than a dozen individuals occurred because corporations that should know better ignored multiple safety principles. The chemicals involved in this case are regulated by Occupational Safety and Health Administration (Herein "OSHA"). The chemicals involved because of their known danger have specific requirements to limit the amount of exposure. See 29 CFR § 1910.1000 (a)(2) and Table Z. It was the violation of these worker protection laws that caused the jury to find GE and Kaiser to be negligent. GE and Kasier withheld from the labors the Material Data Safety Sheets (Herein MSDS).

GE and Kaiser told the labors they were using cleaning products like "409". The labors, Mr. Carlson included, were lead to believe the paper mask and suits, thin rubber galoshes, and Playtex gloves were adequate. [122a]. Mr. Carlson, and the other labors, were working in a basement. MSDS provided with these products warned clearly that neurologic injury could occur unless adequate ventilation or respirators were used, especially in low-lying areas." [81a]. It was observed that "Solvent Syndrome is a condition that has been known for more than 100 years." [210a]. The federal and

state governments have determined organic solvent exposure is a true human health risk and enacted multiple requirements intended to reduce the risk of injury.

These organic solvents are regulated by OSHA and the limit exposure to these organic solvents for a reason. For example limiting exposure to Tetrachloroethylene (PERC) to 5 minutes in any three hours is to prevent injury. See 29 CFR § 1910.1000 (a)(2) and Table Z therein. Had the Ninth Circuit Court of Appeals looked at the proffers of Dr. Goldstein [90a-106a], Dr. Milhem [127a-142a], Dr. Morton [a107-126a], Dr. Lantsberger [143-164a], Dr. Cripe [174a-190a] and Dr. Beaty [165a-173a] the Court would have known each witnessed used the differential diagnosis process to make a scientifically rationale analysis about the probable degree of exposure. That is, for PERC the exposure should have been for less than 15 minutes spread out over the 10 hour work days, but Mr. Carlson was because he only had a paper mask was exposed for hours to PERC.

Mr. Carlson could fill this petition with what the Ninth Circuit either overlooked or ignored in the respective offers of proofs, but that is not the point of this request for certiorari. There is just no reason for the Ninth Circuit to continue to be resistant to the differential diagnosis process. The other circuits have found it predictable, efficient and a manageable means to admit or exclude expert testimony. From litigants standpoints it is a matter of time, resources and economic.

In studiously avoiding the differential diagnosis process the *Schudel* Court opined the plaintiffs' proofs were inadequate because the expert witnesses used "extrapolation. 120 F.3d p. 996-97. Meaning no disrespect of the Court, these uneducated comments on "extrapolation" by the *Schudel* unnecessarily increased the cost of the litigation and further complicated the published case law where chemicals are involved. It was obvious in 1997, whatever the Ninth Circuit Court of Appeals thought about the quality of plaintiffs' proofs suggesting that for the evidence to be scientifically competent scientific research was needed.

This is a negligent conduct case. It has never been a products liability case. The Environmental Protection Agency (herein "EPA"), CDC and OSHA have recognized the plethora of research that has been done on this chemicals. The governments know these chemicals can injure and kill. That is why they are regulated. Suggesting that plaintiffs need to have "human" studies to prove at what level these chemicals injure and kill is not a judicially reasonable standard. [131a, 197a-198a, 214a-215a, 236a].

This is a diversity action. Under Washington State law there is no requirement that Mr. Carlson show which chemicals injured him. *Intalco Aluminum v. L & I*, 66 Wn. App. 644, 833 P.2d 390 (1992). Likewise, when the judiciary recognizes and uses the differential diagnosis processes in negligent conduct litigation the waste of time of potential proof requirements is

acknowledged[9]. See *Hardyman v. Norfolk & Western Ry. Co.,* 243 F.3d at p. 265. (requiring a plaintiff to establish a dose/response relationship makes no sense and essentially forecloses plaintiffs from recovery.)

In the interest of judicial economy, for predictability and feasibility Mr. Carlson request his writ of certiorari be accepted to review reliability of the differential diagnosis process in a *Daubert* analysis.

III. If Rules 49(a) and 50 Are To Be Used Together There Are, And If Not, There Should Be Certain Ground Rules Enforced To Promote Just, Speedy, And Inexpensive Resolutions Of Disputes

A natural question is whether post-trial does a consistent Rule 49(a) verdict, in any manner constrain post-trial proceedings. Carlson observes, if Rule 49(a) is not used with Rules 50(b), then there is no point in Rule 49(a). In *Weisgram v. Marley Co.,* 528 U.S. 440, 120 S. Ct. 1011; 145 L. Ed. 2d 958 (2000) this Court recognized it was in keeping with the Civil Rules of Procedure and due process to permit the Court of Appeals to dismiss a claim after resolving a Rule 50 proceeding.

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[9] Mr. Carlson is not advocating that "dose" evidence is always a waste of time. It may be a necessary and relevant point in some products liability case. But in a negligence claim based upon the failure to provide safety equipment in the face to the defendant failing to collect the statutory air samples specificity as to dose is not critical. Carlson had proof the levels of solvents were 5 to 10 times the permissible exposure limit levels set by the state and federal governments.

The same logic should apply, when the trial court finds in favor of a plaintiff in a Rule 50 proceeding, wherein the court found that at least one of a party's theories in a single negligence claim was supported by substantial evidence. The *Schudel,* 120 F.3d 191 Court specifically declined to hear Mr. Carlson's appeal. The status of the record was that Judge Van Sickle found sufficient evidence to support the negligence claim. The trial court did not have the jurisdictional authority to order a new trial on what GE and Kaiser waived with agree to a Rule 49(a) verdict form. If GE or Kaiser wanted the jury to divide the damages among Mr. Carlson's body parts then it was their obligation to either request or object. They did neither.

In *McCord v. McGuire,* 873 F.2d 1271, 1274, amended 885 F.2d 650 (9th Cir.1989) Judge Kozinski observed in affirming a plaintiff jury verdict when a defendant asserted a plaintiff only proved four of their eight theories of negligence:

> Maguire nevertheless contends that the jury may have based its verdict solely on the four allegedly unsubstantiated factual theories. This is a legitimate concern. However, Maguire's failure to request a special verdict as to each factual theory in the case prevents him from pressing this argument on appeal. (Footnote omitted)

873 F.2d at p. 1274.

This request for certiorari should be accepted to clarify that a Rule 49(a) verdict in face of a Rule 50 motion will receive the same treatment as in *Weisgram v. Marley Co.* Otherwise, there is no point stating in Rule 49(a) that the failure to object or request a special verdict is a waiver of the issues that were or could have been listed in the special verdict form.

CONCLUSION

Justice was not done for Merlin E. Carlson, Jr. Had his case been tried in state court, where he started it, the matter would be long over. Instead, it is thirteen and half years since he was poisoned. The justice he is due has been delayed because of confusion and conflict in the federal court system. The matters that Carlson raises are probably not unique to him given the conflict in Circuits and within the Ninth Circuit Court of Appeals.

Along with these important matters of federal questions, this Court should exercise its supervisory authority to insure that in multi-plaintiff litigation that no single plaintiff has a diminishment of due process in the interest of judicial economy. For reasons set forth above, Petitioner Carlson respectfully, request that this Court grant their Petition for a Writ of Certiorari.

Respectfully submitted this 23rd day of August 2002.

Marcia M. Meade, WSBA #11122
Attorney for Petitioner
Merlin E. Carlson, Jr.

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DAVID SCHUDEL, et al.,
Plaintiffs,
and
MERLIN E. CARLSON, JR.,
Plaintiff-Appellant,
v.
GENERAL ELECTRIC CO., a foreign corporation; KAISER ALUMINUM AND CHEMICAL CORPORATION, a foreign corporation,
Defendants-Appellees.

No. 99-336089

D.C. No. CV-92-00081-FVS

MEMORANDUM

Appeal from the United States District Court
for the Eastern District of Washington. D.C.
No. CV-92-00081-AAM, D.C. No. CV-92-00081-AAM.
Alan A. McDonald, District Judge, Presiding.
Argued and Submitted
September 11, 2001—Seattle, Washington
Filed May 10, 2002
Before: KOZINSKI and GOULD, Circuit Judges, and SCHWARZER*, Senior District Judge.
*The Honorable William W Schwarzer, Senior United States District Judge for the Northern District of California, sitting by designation.

Merlin Carlson appeals from the judgment dismissing his claim for respiratory and neurological injuries allegedly caused by defendants' negligence[1]. Following trial before Judge Van Sickle, the jury returned a verdict for Carlson and his co-plaintiffs. The district court granted defendants' motion for JNOV with respect to Carlson's respiratory injuries; with respect to his neurological injuries, it vacated the verdict and granted a new trial on the ground that the verdict had been tainted by inadmissible evidence on the respiratory injuries.

[1] This disposition is limited to the *Carlson* appeal. The *Williams/Schudel* appeal is the subject of a separate Memorandum disposition.

On appeal we held that, in the absence of a final judgment, we lacked appellate jurisdiction and remanded. *Schudel v. General Electric Co.*, 120 F.3d 991 (9th Cir. 1997).

On remand, Judge McDonald let stand the JNOV with respect to Carlson's respiratory injuries. The court ordered Carlson to show cause only why the neurological injury component of his claim should not be dismissed if based on the same evidence found insufficient on the prior appeal. The court concluded that Carlson had no new evidence to offer. Because on co-plaintiff Deborah Guaragna-Williams' (Williams) appeal we had held the same evidence offered at trial to be inadmissible under *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, 125 L. Ed. 2d 469, 113 S. Ct. 2786 (1993), and *Daubert v. Merrell Dow Pharmaceuticals*, 43 F.3d 1311 (9th Cir. 1995)), the district court entered judgment against Carlson.

The JNOV [2]

Carlson contends that the judgment dismissing the respiratory injury component of his injuries was improper. As we observed on the prior appeal, Carlson alleged a single claim of negligence, not separate claims for neurological injury and respiratory injury. *Schudel*, **120 F.3d at 994.** Under Rule 50(a)(1), the court "may grant a motion for judgment as a matter of law against [a] party with respect to a *claim* . . . ." FED. R. CIV. P. 50(a)(1) (emphasis added). The court lacks authority to grant judgment with respect to an issue when substantial evidence supports the claim. *McCord v. Maguire*, 873 F.2d 1271, 1273-74 (9th Cir. 1989) ("When a general verdict may have rested on factual allegations unsupported by substantial evidence, we will uphold the verdict if the evidence is sufficient with respect to any of the allegations."). Thus, we must determine whether there is substantial evidence to support a verdict on either respiratory or neurological injury proximately caused by defendants' negligence.

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[2] Rule 50 was amended in 1991, changing the terminology from JNOV to judgment as a matter of law.

Neurological injury

On the prior appeal we reviewed the sufficiency of the neurological causation testimony of Dr. William Morton, Dr. Daniel Goldstein and Dr. Paula Lantsberger in the context of defendants' appeal from the jury verdict in favor of Carlson's co-plaintiff Williams. We found that none of the testimony passed muster under *Daubert. Schudel*, 120 F.3d at 996-97. Dr. Morton's and Dr. Goldstein's testimony lacked the requisite reliability. Dr. Lantsberger's testimony lacked relevance, because she testified only to a possibility, not a probability, of consequential brain damage to Williams.

As a general rule, we will not reconsider questions that another panel has decided on a prior appeal in the same case. *Disimone v. Browner*, 121 F.3d 1262, 1266 (9th Cir. 1997). All plaintiffs relied on the same expert testimony. The lack of reliability of Dr. Morton's and Dr. Goldstein's testimony therefore undermines Carlson's case as it did Williams'. With respect to Dr. Lantsberger, the record discloses that her testimony respecting Carlson was equally lacking in relevance. She testified that "I believe it was the chemicals that [Carlson] was exposed to causing him problems," that his "brain injuries are related to his exposure," and that "I believe that [his personality change] is associated with his exposure." Because this testimony proves at most a possibility (not a probability) of consequential injury, we conclude that there is no substantial neurological symptom causation evidence.

Respiratory Injury

Judge Van Sickle granted defendants' post-trial Rule 50 motion, holding that a reasonable jury could not have found for Carlson on the respiratory (non-neurological) component of his claim. On appeal, we did not address the sufficiency of the expert testimony relating to this component. On remand, Judge McDonald treated Judge Van Sickle's order as remaining in effect. Having found no evidence supporting the neurological component, he directed entry of judgment for defendants on Carlson's entire claim. Given this procedural posture, we must determine whether Judge Van Sickle

correctly set aside the jury verdict, finding that no reasonable jury could have concluded that defendants proximately caused Carlson's respiratory injury.[3]

Judge Van Sickle correctly found that Carlson did not demonstrate at trial that defendants caused his injuries. Because his injuries involved obscure medical factors and laypeople could not determine the injuries' cause without resorting to speculation or conjecture, expert testimony was required to establish causation. *Bruns v. PACCAR, Inc.*, 77 Wn. App. 201, 890 P.2d 469, 477 (Wash. App. 1995). For the reasons stated above, Drs. Morton's and Goldstein's causation testimony was unreliable and therefore inadmissible under *Daubert*. Dr. Lantsberger did not exhibit the requisite certainty in her causation testimony. Under established Washington precedent, medical testimony must show that the act complained of more probably than not caused the injury. *O'Donoghue v. Riggs*, 73 Wn.2d 814, 440 P.2d 823, 830 (Wash. 1968). An expert may phrase her opinion about causation in a variety of ways--such as "high probability," "reasonable scientific certainty," or "firmly concluded"--but she must provide the jury with "the required level of legal certainty." *Bruns*, 890 P.2d at 477. Dr. Lantsberger testified only that exposure to the work site was "the joining factor of all the physical problems" and that she "believed [the symptoms] are associated with the exposure." Because these articulations fall short of the requisite level of certainty (i.e., more probable than not), we must affirm the judgment against Carlson.

The judgment is affirmed. AFFIRMED.

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[3] Defendants have not raised an issue concerning the admissibility of evidence on the respiratory injury received at the trial.

FOR PUBLICATION
UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

DAVID SCHUDEL, *et al.*,
Plaintiffs,
and
DEBORAH GUARAGNA-WILLIAMS,
Plaintiff-Appellee,
v.
GENERAL ELECTRIC CO., a foreign corporation; KAISER ALUMINUM AND CHEMICAL CORPORATION, a foreign corporation,
Defendants-Appellants.

No. 95-35092

D.C. No. CV-92-00081-FVS

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON; TIMOTHY SCHUDEL; SANDRA SCHUDEL, husband and wife, and the marital community composed thereof; KATHRENE RAE HOWELL; CRAIG A. THOMPSON; JOHN HOPKINS; RUTH HOPKINS, husband and wife, and the marital community composed thereof,
Plaintiffs-Appellants,
v.
GENERAL ELECTRIC CO., a foreign corporation; KAISER ALUMINUM AND CHEMICAL CORPORATION, a foreign corporation,
Defendants-Appellees.

No. 95-35145

D.C. No. CV-92-00081-FVS

OPINION

Appeals from the United States District Court
for the Eastern District of Washington
Fred Van Sickle, District Judge, Presiding
Argued and Submitted
October 8, 1996—Seattle, Washington
Filed July 23, 1997
Before: James R. Browning, Dorothy W. Nelson, and
Ferdinand F. Fernandez, Circuit Judges.
Opinion by Judge Browning

The court of appeals dismissed appeals, vacated a judgment, and reversed orders of the district court. The court held that in considering a Rule 50(b) post-verdict motion for judgment notwithstanding the verdict (JNOV), a district court should not ignore erroneously admitted evidence.

Appellees David Schudel, Deborah Williams and others sued appellants General Electric Co. and Kaiser Aluminum and Chemical Corp. for damages, alleging injuries from exposure to toxic substances and loss of consortium.

At trial, the only evidence on causation on behalf of appellants Daniel Glass, Craig Thompson, and David, Tim, and Sandra Schudel (Schudel plaintiffs) was the testimony of Dr. Paula Lantsberger. She based her expert opinions on two theories: specific condition causation and "whole person aggravation."

In addition to Dr. Lantsberger, Drs. Morton and Goldstein testified on neurological symptom causation on behalf of Williams. The district court approved their reliance on interview data relating to the plaintiffs' symptoms that was collected by Diane Nebel while she was investigating an incident of Legionnaire's disease at Kaiser's facility.

Drs. Goldstein and Lantsberger testified that the Nebel data were the kind that toxicologists consider reliable and regularly rely on. Dr. Morton testified that Williams suffered from brain damage that was "more probably than not" caused by exposure to solvents (TCA and Perc) that General Electric had used to clean up toxic substances at Kaiser's facility.

Dr. Goldstein conceded that none of the organic solvents

involved in this case had been proven to be neurotoxic; that it would be improper to make inferences as to the toxicity of TCA and Perc based on the toxic nature of other solvents; and that repeated exposure to organic solvents over a long period must be documented to establish a causal relationship. Two studies cited by Dr. Goldstein (Altman and Kalifant studies) involved TCA and Perc. The Altman study found no relationship between exposure to Perc and the brain damage or loss of consciousness alleged by the plaintiffs. The Kalifant study involved long-term, repetitive exposure to TCA at high levels.

A jury returned verdicts for the plaintiffs. On defense motions for JNOV or a new trial, the district court affirmed the verdict for Williams, but granted JNOV with respect to respiratory injuries alleged by appellant Merlin Carlson, and as to neurological injuries asserted by appellant Kathrene Froese, John Hopkins, and Ruth Hopkins (Froese plaintiffs). The court vacated the verdicts for them on the ground that they were "tainted" by evidence of injuries as to which JNOV had been granted, and ordered a new trial. Lastly, the court granted JNOV on all the claims of the Schudel plaintiffs. In doing so, the court exercised Dr. Lantsberger's testimony relating the "whole person aggravation" theory, having concluded that it was inadmissible. Both sides appealed.

[1] The court of appeals has jurisdiction to review final judgments on entire claims, not on individual issues. An order adjudicating only one issue that is not determinative of an entire claim is not appealable.

[2] Litigants who advance a single legal theory of liability applied to one set of facts allege a single claim. Carlson and Froese alleged a single claim of negligence, not separate claims for neurological injury and respiratory injury. The Hopkinses alleged claims for negligence and loss of consortium, not separate claims for neurological injury and respiratory injury as to each claim.

[3] The district court granted JNOV as to issues related to certain injuries allegedly suffered by the plaintiffs because

of the defendants' negligence. The court of appeals had no jurisdiction to review the district court's rulings on those issues because the claims for negligence and the derivative claims for loss of consortium were not finally determined. The order granting a new trial was also interlocutory and not immediately appealable.

[4] When deciding a JNOV motion, a trial court may not ignore evidence erroneously admitted at trial. Excluding evidence after the verdict is unfair to a party who may have relied on the determination that the evidence was inadmissible. [5] The record should be taken as it existed when the trial closed.

[6] The district court properly concluded that Dr. Lantsberger's testimony based on the "whole person aggravation" theory should have been excluded. However, once the jury rendered its verdict based on the improperly admitted evidence, the district court erred in excising that evidence when ruling on the JNOV motion. Considering all the evidence, there was sufficient evidence to support the verdict in favor of the Schudel plaintiffs.

[7] Nonetheless, these verdicts could not stand. The district court erred in denying the defendants' motion for a new trial. A new trial should be granted when the erroneous admission of evidence affected the substantial rights of the parties. Dr. Lantsberger's testimony was the only evidence of causation; its erroneous admission was undoubtedly prejudicial.

[8] The trial judge must determine that proposed scientific expert testimony will be both reliable and relevant.

[9] Scientific knowledge is reliable if it is grounded in the methods and procedures of science and connotes more than subjective belief or unsupported speculation. In determining reliability, the focus must be solely on principles and methodology, not on the conclusions that they generate.

[10] Evidence of scientific knowledge is relevant if the reasoning or methodology properly can be applied to the facts in issue. A court's determination of relevance must consider

the applicable substantive standard. Under Washington tort law, a plaintiff must show that the act complained of "probably" or "more likely than not" caused the subsequent disability.

[11] The Nebel data provided the basis for much of the scientific testimony presented by Williams' experts. [12] The district court acted within its discretion in approving the use of the data by Williams' expert witnesses. Dr. Morton's testimony met the relevance requirement. However, it did not meet the requirement of reliability.

[13] Dr. Morton's conclusions were based on extrapolations from studies that involved solvents other than TCA or Perc and examined long-term exposure at relatively low concentrations, or short-term exposure at very high concentrations, rather than short-term, moderate-level exposure sustained by Williams. Dr. Morton did not establish that it was scientifically acceptable to draw general conclusions about the neurotoxicity of TCA and Perc from studies of other chemicals.

[14] The district court erroneously reasoned that because there was evidence that acute exposure to TCA and Perc can cause toxic encephalopathy, whether Williams' exposure was sufficient to cause her symptoms was a question for the jury. Williams' exposure was neither long enough nor intense enough to fall within the ranges described in the studies Dr. Morton relied upon. Extrapolation was necessary to make the studies relevant, and there was no showing that the necessary extrapolation was scientifically acceptable.

[15] Dr. Goldstein acknowledged that the mechanism of neurotoxicity from TCA and Perc had not been demonstrated. [16] Dr. Lantsberger's testimony failed to meet the relevance requirement. She testified that it was only a "possibility," not a "probability," that Williams suffered from brain damage from exposure to solvents. Dr. Lantsberger admitted that she could not testify to a specific cause and effect relationship between Williams' exposure and health problems. She relied on a "whole person aggravation" theory without establishing

that it had a scientific basis. [17] Dr. Lantsberger's testimony regarding the hazards of TCA and Perc was inadmissible. Like Dr. Goldstein, she relied on the Altman and Kalifant studies to reach her conclusions, and admitted that medical science had not determined the effects of short-term exposure to the solvents.

[18] Only one of the expert witnesses whose testimony was not challenged provided causation testimony, and it related only to Williams' respiratory injury. [19] Considering all the evidence admitted at trial, the district court properly denied the defendants' JNOV motion with respect to Williams. However, admission of the challenged testimony was prejudicial because it was the sole causation evidence with respect to Williams' neurological symptoms.

BROWNING, Circuit Judge:

This diversity case involves claims for damages from negligence and loss of consortium against defendants General Electric Company and Kaiser Aluminum and Chemical Corporation. Kaiser contracted with General Electric to clean up polychlorinated biphenyls (PCBs) at Kaiser's Trentwood facility in Spokane, Washington. Nine of the ten plaintiffs were employed by General Electric on the cleanup.[4] These plaintiffs alleged they developed various neurological and respiratory problems from exposure to two cleaning solvents, trichloroethane (TCA) and perchloroethylene (Perc).

A jury returned verdicts for the plaintiffs. The defendants moved for JNOV or new trial. The district court affirmed the verdict in favor of one plaintiff, Deborah Williams. The court granted JNOV with respect to respiratory injuries[5] asserted by Merlin Carlson ("Carlson") and with respect to

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[4] The tenth plaintiff, Sandra Schudel, did not work at the site, but asserted a loss of consortium claim as the wife of plaintiff Tim Schudel.

[5] With respect to Carlson, the term "respiratory injuries" applies to respiratory injuries, fatigue, overall body pain, and all other all alleged injuries that do not fall within the term "neurological injuries."

neurological injuries[6] asserted by Kathrene Froese, John Hopkins, and Ruth Hopkins ("the Froese plaintiffs"). The court ordered a new trial with respect to injuries of Carlson and the Froese plaintiffs as to which JNOV had not been granted. Finally, the court granted JNOV on all claims asserted by the five remaining plaintiffs ("the Schudel plaintiffs"[7]).

Defendants appeal the verdict in favor of plaintiff Williams. The other plaintiffs appeal the granting of motions for JNOV or new trial. We address four issues: (1) whether the district court had jurisdiction over the defendants' motions for JNOV or new trial; (2) whether we have jurisdiction to review the district court's order for JNOV and new trial as to Carlson and the Froese plaintiffs; (3) whether the district court erred by granting JNOV against the Schudel plaintiffs without considering expert testimony the court concluded after trial had been erroneously admitted; and (4) whether the district court properly admitted expert testimony on behalf of plaintiff Williams.

I. District Court Jurisdiction Over the Defendants' Motions For JNOV or New Trial

Plaintiffs argue the district court lacked jurisdiction to consider defendants' motions for JNOV or new trial because the motions were not properly served.[8] When the motions were filed, Federal Rules of Civil Procedure 50 and 59 required the defendants to both file and serve such motions within ten days after entry of judgment.[9] Defendants filed the

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[6] With respect to these plaintiffs, the term "neurological injuries" applies to neurological injuries, headaches, rashes, and all other alleged injuries that do not fall within the term "respiratory injuries."

[7] David Schudel, Tim Schudel, Sandra Schudel, Daniel Glass, and Craig Thompson.

[8] Plaintiff Carlson does not raise this issue; his attorney was timely served.

[9] *See* former Fed. R. Civ. P. 50(b) ("Such a motion [for judgment as a matter of law] may be renewed by service and filing not later than 10 days after entry of judgment."): former Fed. R. Civ. P.

motions and delivered them to Federal Express for service on the tenth day after judgment. While personal delivery or delivery to the U.S. Postal Service would have satisfied the service requirement, delivery to Federal Express did not. *Magnuson v. Video Yesteryear*, 85 F.3d 1424, 1431 (9th Cir. 1996).

Rules 50 and 59 were amended in 1995, however, to require only that such motions be filed, not served, no later than 10 days after entry of judgment. *See* Fed. R. Civ. P. 50(b), 59(b). The amendments took effect December 1, 1995, and "govern all proceedings in civil cases thereafter commenced and, insofar as just and practicable, all proceedings in civil cases then pending." S. Ct. Order, Amendments to the Federal Rules of Civil Procedure (Apr. 27, 1995).

This proceeding was pending on December 1, 1995, and no prejudice will result from application of the amendments. All parties have briefed the substantive, non-jurisdictional arguments in detail. No additional action on the part of the court or the parties is required to proceed. We have applied amended federal rules of appellate procedure retroactively in similar circumstances. *see Schroeder v. McDonald*, 55 F.3d 454, 459-60 (9th Cir. 1995); *Wallis v. J.R. Simplot Co.*, 26 F.3d 885, 888 (9th Cir. 1994), and do so here.

II. Appellate Jurisdiction Over Order Granting JNOV and New Trial to Carlson and the Froese Plaintiffs.

The district court granted JNOV with respect to respiratory injuries allegedly sustained by Carlson and with respect to neurological injuries allegedly sustained by the Froese plaintiffs. The court vacated the verdicts for these plaintiffs on the ground that they were "tainted" by the evidence of the injuries as to which JNOV had been granted, and ordered a new trial as to Carlson's neurological injuries and the Froese plaintiffs' respiratory injuries. The court certified appeals from the orders for new trial pursuant to

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59(b) ("A motion for a new trial shall be served not later than 10 days after the entry of judgment.").

Federal Rule of Civil Procedure 54(b).[10]

[1] We have jurisdiction to review final judgments on entire claims, not on individual issues. An order adjudicating only one issue that is not determinative of an entire claim is not appealable even if a district court certifies the order under Rule 54(b). *Arizona State Carpenters Pension Trust Fund v. Miller*, 938 F.2d 1038, 1039 (9th Cir. 1991). We must determine independently whether a certified judgment is final as to a particular claim.[11] *Id.*

[2] Litigants who advance a single legal theory of liability applied to one set of facts allege a single claim. *Liberty Mut. Ins. Co. v. Wetzel*, 424 U.S. 737, 743 (1976). Carlson and Froese alleged a single claim of negligence, not separate claims for neurological injury and respiratory injury. Similarly, the Hopkinses alleged claims for negligence and loss of consortium, not separate claims for neurological injury and respiratory injury as to each claim.

[3] The district court granted JNOV as to issue related to certain injuries allegedly suffered by plaintiffs because of defendants' negligence. We have no jurisdiction to review the court's rulings on these issues because the claims for negligence and the derivative claims for loss of consortium have not been finally determined. The order granting new trial is also interlocutory and not immediately appealable.

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[10] Under Fed. R. Civ. P. 54(b), when a lawsuit involves multiple claims or multiple parties, a district court "may direct the entry of a final judgment as to one or more but fewer than all the claims or parties only upon an express determination that there is no just reason for delay and upon an express direction for the entry of judgment."

[11] Carlson and the Froese plaintiffs argue the standard of review is not *de novo*, but abuse of discretion. We review the certification of an appeal under Rule 54(b) for abuse of discretion. *Texaco, Inc. v. Ponsoldt*, 939 F.2d 794, 797 (9th Cir. 1991). Even though a decision is certified under Rule 54(b), however, we must independently ensure that we are dealing with a final judgment before exercising jurisdiction. *Arizona State Carpenters*, 938 F.2d at 1039.

Allied Chem. Cor. v. Daiflon, Inc., 449 U.S. 33, 34 (1980); *Roy v. Volkswagenwerk Aktiengesellschaft*, 781 F.2d 670, 671 (9th Cir. 1985).[12]

III. Excising Testimony in Granting JNOV

The Schudel plaintiffs argue the district court erred in excising the previously admitted testimony of Dr. Paula Lantsberger before granting defendants' motion for JNOV. We agree.

Dr. Lantsberger was the only witness on causation on behalf of the Schudel plaintiffs. Dr. Lantsberger described symptoms and offered specific testimony regarding causation under two theories: a specific condition causation theory; and a "whole person aggravation" theory. The defendants filed a motion to exclude Dr. Lantsberger's causation testimony prior to trial and a motion to strike the testimony during trial. The district court did not rule on these motions.

After the jury returned verdicts in favor of plaintiffs and defendants moved for JNOV, the court held that Dr. Lantsberger's causation testimony based on the "whole body aggravation" theory had been admitted erroneously. The court then considered the sufficiency of the remaining evidence to support the jury verdicts and granted the motion for JNOV. The court denied defendants' alternative request for a new trial.

[4] Four circuits have held that, when deciding a motion for JNOV, a trial court may not ignore evidence erroneously admitted at trial, reasoning that excluding evidence after the verdict is unfair to a party who may have relied on the

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[12] Carlson and the Froese plaintiffs argue this court has jurisdiction to review a conditional grant of a new trial under Fed. R. Civ. P. 50(c). *See Air-Sea Forwarders, Inc. v. Air Asia Co.*, 880 F.2d 176, 190 n.15 (9th Cir. 1989) (stating that appellate courts may review conditional new trial orders because the plain language of Rule 50(c)(1) expressly permits this review). The district court ordered a new trial under Rule 50(b), not Rule 50(c)(1). The order was not conditioned on reversal of the order granting JNOV. Rule 50(b) does not provide for review of non-conditional new trial orders.

determination that the evidence was admissible.[13] "If evidence is ruled inadmissible during the course of the trial, the plaintiff has the opportunity to introduce new evidence. However, when that evidence is ruled inadmissible in the context of deciding a motion for JNOV, the plaintiff, having relied on the evidence already introduced, is unable to remedy the situation." *Jackson v. Pleasant Grove Health Care Ctr.*, 980 F.2d 692, 696 (11th Cir. 1993).

[5] We recently indicated we would abide by the same rule. *See Central Office Tel., Inc. v. American Tel. & Tel. Co.*, 108 F.3d 981, 993 (9th Cir. 1997). We now hold that when ruling on a Rule 50(b) motion, a district court should not exclude evidence erroneously admitted at trial. The record should be taken as it existed when the trial closed. This rule promotes certainty: litigants need not supplement conditionally admitted evidence, perhaps unnecessarily; and district courts need not speculate as to what other evidence might have been offered if the evidence had been excluded at trial. The rule promotes fairness: punishing a litigant for the court's erroneous admission of evidence is unfair; and the remedy of a new trial is available to put both sides on an equal footing. *Jackson*, 980 F.2d at 696 n.4.

[6] The district court properly concluded that Dr. Lantsberger's testimony based on the "whole person aggravation" theory of causation did not meet the standard of *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579

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[13] *See Jackson v. Pleasant Grove Health Care Ctr.*, 980 F.2d 692, 695-96 (11th Cir. 1993); *Douglas v. Eaton Corp.*, 956 F.2d 1339, 1343-44 (6th Cir. 1992); *Sumitomo Bank v. Product Promotions, Inc.*, 717 F.2d 215, 218 (5th Cir. 1983); *Midcontinent Broadcasting Co. v. North Cent. Airlines, Inc.*, 471 F.2d 357, 358-59 (8th Cir. 1973). The Third Circuit has held that such exclusion is proper as long as other evidence relating to the same issue was not barred during trial as cumulative, reasoning that the moving party has a competing interest in litigating a case only once and expressing doubt that litigants would hold back significant evidence at trial. *Lightning Lube, Inc., v. Witco Corp.*, 4 F.3d 1153, 1199-1200 (3d Cir. 1993).

(1993) (*Daubert I*), (outlined in Part IV of this opinion), and should have been excluded. Once the jury rendered its verdict based on the improperly admitted evidence, however, the district court erred in excising that evidence when ruling on the motion for JNOV. Considering all the evidence admitted at trial, including Dr. Lantsberger's "whole person aggravation" theory testimony, we conclude there was sufficient evidence to support the jury verdicts in favor of the Schudel plaintiffs.

[7] Nonetheless, these verdicts may not stand. The district court erred in denying defendants' motion for new trial. A new trial should be granted when the erroneous admission of evidence affected the substantial right of the parties. Fed. R. Civ. P. 61. Dr. Lantsberger's testimony was the only evidence of causation; its erroneous admission was undoubtedly prejudicial.

IV. The Defendants' Appeal

Defendants argue the neurological symptom causation testimony of Dr. William Morton, Dr. Daniel Goldstein, and Dr. Lantsberger underlying the jury verdict for Deborah Williams was not admissible under Federal rule of Evidence 702.[14]

A.

[8] The Supreme Court held in *Daubert I*, 509 U.S. at 590-91, that Rule 702 requires the trial judge to determine that proposed scientific expert testimony will be both reliable and relevant. *See also Daubert v. Merrell Dow Pharm.*, 43 F.3d 1311, 1313 (9th Cir. 1995) (*Daubert II*).

[9] Scientific knowledge is reliable if it is "ground[ed] in the methods and procedures of science" and "connotes more than subjective belief or unsupported speculation." *Daubert I*, 509 U.S. at 590. In determining reliability, "[t]he focus . . .

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[14] Defendants also argue the trial court should have held a pretrial hearing on the admissibility of the testimony of Williams' experts. Because we conclude the expert testimony should have been excluded, we do not decide whether a pretrial hearing should have been held.

must be solely on principles and methodology, not on the conclusions that they generate." *Id.* at 595.

[10] Evidence of scientific knowledge is relevant if the "reasoning or methodology properly can be applied to the facts in issue." *Id.* at 593; *see also Daubert II*, 43 F.3d at 1315 (evidence of scientific knowledge must "logically advance[ ] a material aspect of the proposing party's case"). A court's determination of relevance must consider the applicable substantive standard. *See id.* at 1320. Under Washington tort law, a plaintiff must show that the "the act complained of 'probably' or 'more likely than not' caused the subsequent disability." *O'Donoghue v. Riggs*, 440 P.2d 823, 830 (Wash. 1968). This is virtually the same as the standard under California tort law applied in *Daubert II*. *See* 43 F.3d at 1320. Under this standard, we held in *Daubert II* that expert testimony offered to prove causation did not satisfy the relevance requirement because the evidence suggested only that use of the drug at issue "could *possibly* have caused plaintiffs' injuries," rather than "more likely than not" caused the injuries, i.e., that use of the drug more than doubled the likelihood the injuries would occur. 43 F.3d at 1320-22.

B.

[11] The district court approved reliance by Williams' experts on interview data collected by Diane Nebel. Nebel contacted many of the workers at the Kaiser facility after one of the project supervisors fell ill with Legionnaire's disease. Nebel found no evidence of Legionnaire's outbreak, but did discover that some of the workers, including the plaintiffs, suffered from various medical symptoms. The data collected in Nebel's Legionnaire's disease investigation provided the basis for much of the scientific testimony presented by Williams' experts at trial.

[12] The district court acted within its discretion in approving the use of this data by Williams' expert witnesses. Dr. Goldstein and Dr. Lantsberger both testified the data was of the type toxicologists consider reliable and regularly rely upon. *See* Fed. R. Evid. 703.

Dr. Morton testified that plaintiff Williams suffered from solvent induced toxic encephalopathy which "more probably than not" was caused by exposure to Perc and TCA. Dr. Morton's testimony met *Daubert's* relevance requirement. However, it did not meet *Daubert's* requirement of reliability.

[13] Dr. Morton's conclusions were based on extrapolation from studies that: (1) involved organic solvents other than TCA or Perc; and (2) examined long-term exposure at relatively low chemical concentrations or short-term exposure at very high concentrations, rather than the short-term, moderate-level exposure sustained by Williams. Dr. Morton did not establish it was scientifically acceptable to draw general conclusions about the neurotoxicity of TCA and Perc from studies of other chemicals; indeed, the testimony indicated small differences in molecular structure often have significant consequences.

[14] As to differences in length and intensity of exposure, the district court erroneously reasoned that because there was evidence that acute exposure to TCA and Perc can cause toxic encephalopathy, whether Williams' exposure was sufficient to cause her symptoms was a question for the jury. Williams' exposure was neither long enough nor intense enough to fall within the ranges described in the studies Dr. Morton relied upon. Extrapolation was necessary to make the studies relevant, and there was no showing that the necessary extrapolation was scientifically acceptable.[15]

Dr. Goldstein's testimony suffered from similar deficiencies. Dr. Goldstein conceded that only five organic solvents, none of which were involved in this case, had been proven to be neurotoxic. He also testified that it would be improper to infer conclusions as to the toxicity of TCA and Perc based on the toxicity of other solvents, and that repeated exposure to nonpersistent toxins such as organic solvents over

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[15] Given our analysis of the admissibility of Dr. Morton's testimony, we need not consider defendants' contention that his testimony should have been excluded because testimony based on case reports is not admissible under *Daubert*.

a long period must be documented to establish a causal relationship.

[15] Dr. Goldstein acknowledged that the biochemical mechanism of neurotoxicity from TCA and Perc has not been demonstrated. Only two studies cited by Dr. Goldstein involved TCA and Perc, and neither met *Daubert* standards. The Altman study found no relationship between exposure to Perc and the toxic encephalopathy or loss of consciousness alleged by the plaintiffs. The Kalifant study involved long-term (7-15 years), repetitive exposures to TCA at high levels.

[16] Dr. Lantsberger's testimony failed to meet *Daubert's* relevance requirement. She testified it was only a "possibility," not a "probability," that Williams suffered organic brain damage from exposure to solvents at the facility. Dr. Lantsberger admitted she could not testify to a specific cause and effect relationship between Williams' exposure and health problems. She relied instead on a "whole person aggravation" theory without establishing that the theory had a scientific basis.

[17] Dr. Lantsberger's testimony regarding the hazards of TCA and Perc was inadmissible under *Daubert*. Dr. Lantsberger, like Dr. Goldstein, relied on the Altman and Kalifant articles to reach her neurotoxicity conclusions, and like Dr. Goldstein, admitted that medical science has not determined the effects of short-term exposure to the solvents involved.

[18] Plaintiff Williams points to other expert witnesses whose testimony was not challenged by defendants. Only one of these experts provided causation testimony, and his testimony related only to Williams' respiratory injury.

[19] Considering all the evidence admitted at trial, including the erroneously admitted evidence, we hold the district court properly denied defendants' motion for JNOV with respect to Williams. Admission of the challenged expert testimony was prejudicial, however, because it was the sole causation evidence with respect to Williams' neurological

symptoms. Accordingly, we vacate the judgment entered on the jury verdict, reverse the district court's denial of defendants' motion for a new trial, and remand.

CONCLUSION

We lack jurisdiction to review the district court's grant of JNOV and new trial as to plaintiffs Merlin Carlson, Kathrene Froese, John Hopkins, and Ruth Hopkins, and DISMISS their appeals.

We REVERSE the grant of JNOV and the denial of the motions for new trial as to the plaintiffs David Schudel, Tim Schudel, Sandra Schudel, Daniel Glass, and Craig Thompson, and REMAND.

We find plaintiff Deborah Williams' neurological expert testimony on causation inadmissible, VACATE the judgment entered on the jury verdict in her favor, REVERSE the denial of the motion for new trial, and REMAND.

DISMISSED in part, and VACATED, REVERSED, and REMANDED in part. No costs allowed.

FILED IN THE U.S. DISTRICT COURT EASTERN DISTRICT OF WASHINGTON NOVEMBER 25 1994
JAMES R. LARSEN, CLERK DEPUTY

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al, Plaintiffs, vs. GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	NO. CS-92-081-FVS ORDER RE POST-TRIAL MOTIONS

BEFORE THE COURT are certain post-trial motions. They were decided without oral argument on November 22, 1994. See Local Rule ("LR") 7(h)(3).

I. PLAINTIFFS' MOTION TO STRIKE

A. Background

Judgment was entered on July 13, 1994. On July 27, 1994, the defendants filed motions for both judgments as a matter of law and a new trial. Fed.R.Civ.P. 50(b); Fed.R.Civ.P. 59. That same day, copies of the motions were mailed to opposing counsel via Federal Express.

The plaintiffs now move the Court to strike the defendants' Rule 50(b) and Rule 59 motions. They argue that the motions were not served in a timely manner.

B. Ruling

Motions for judgment as a matter of law and for a new trial must be filed and served within ten days of the date judgment is entered. Fed.R.Civ.P. 50(b); Fed.R.Civ.P. 59(b). In calculating the ten-day deadline, neither intermediate weekends nor legal holidays are counted. Fed.R.Civ.P. 6(b). Thus, the defendants had until the twenty-seventh of July to file and serve their Rule 50(b) and Rule 59 motions.

It is undisputed that the defendants mailed copies of their motions to all opposing parties by Federal Express on July 27,

1994. Since "[s]ervice by mail is complete upon mailing," Fed.R.Civ.P. 5(b), the defendants' motions would appear to have been both filed and served prior to the deadline.

The plaintiffs disagree. They contend that sending documents by Federal Express does not constitute "mailing" within the meaning of Rule 5(b).

Notwithstanding the plaintiffs' disagreement, they have failed to cite a single decision adopting their interpretation of Rule 5(b). They are forced to rely upon Transco Leasing Corp. v. United States, 992 F.2d 552, 554 n.2 (5th Cir. 1993), a case in which the Fifth Circuit cautioned, in dicta, "that service by Federal Express may not be service by mail."[16]

The defendants, by contrast, have cited two district courts decisions that considered – and rejected – the plaintiffs' position. Both held that Rule 5(b) does not require mailing through the United States Postal Service. United States v. Certain Real Property & Premises Known As 63-29 Trimble Rd., 812 F.Supp. 332, 334 (E.D.N.Y. 1992); Edmond v. United States Postal Serv., 727 F.Supp. 7, 11 (D.D.C. 1989), rev'd on other grounds, 949 F.2d 415 (1991).

Here, it was reasonable for the defendants to believe that the method of service they utilized would be more prompt than ordinary first class mail, and every bit as reliable. Given the plaintiffs' failure to cite authority supporting their interpretation of Rule 5(b), and the fact that two district courts have specifically rejected their position, the plaintiffs' motion to strike will be denied.

II. DEFENDANTS' MOTION FOR JUDGMENT AS A MATTER OF LAW.

The defendants offer six reasons why the Court should grant judgment as a matter of law. Fed.R.Civ.P. 50(b). They are as follows: (1) the plaintiffs' experts based their opinions upon unreliable data; (2) certain experts were not qualified, and their opinions do not constitute "scientific knowledge"

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[16]Professors Wright and Miller mention Transco, but do not analyze the issue. 4A C. Wright, A. Miller, Federal Practice and Procedure, § 1148 (2d ed. Supp. 1994).

within the meaning of Rule 702; (3) even if the disputed opinions are admissible, they fail to establish causation; (4) under Washington law, many of Dr. Lantsberger's opinions regarding causation are legally insufficient; (5) the plaintiffs were loaned servants; and (6) Kaiser owed no duty of care to the plaintiffs.

A. Reliability/Loaned Servant/Duty

Not all of the defendants' arguments require in-depth analysis. The first, fifth, and sixth may be disposed of rather quickly.

1. Reliability of Data

The Court refused to admit the "Nebel" exhibits because they were hearsay, and the plaintiffs had not demonstrated the applicability of an exception to the hearsay rule. Moreover, even if an exception had applied, the exhibits were cumulative. (Tr. at 5790-91).

Later, the defendants attempted to impeach Craig Thompson with statements he made to Ms. Nebel. See Fed.R.Evid. 801 (d) (2) (A) (admission by party-opponent). The plaintiffs objected. (Tr. at 5970.) In sustaining the objection, the Court said, in part, "They [the Nebel exhibits] were not admitted because of concerns about reliability."" (Tr. at 5984.)

The defendants have interpreted the court's statement as a finding that the Nebel exhibits were unreliable. When both sections of the transcript are read in context, it is evident that no such finding was intended.

2. Loaned Servant

The jury was instructed properly on the question of "loaned servant." Since there is substantial evidence to support the jury's determination that the plaintiffs were not loaned servants, there is no basis for granting the defendants judgment on this issue.

3. Duty of Care

With Respect to the question of "duty," the defendants have cited no new authority. The Court is satisfied that a duty existed.

B. Admissibility of Certain Expert Opinions

The second argument focuses on the admissibility of opinions given by Drs. Lantsberger, Goldstein, and Morton. The defendants submit that these three witnesses were not qualified to render opinions regarding toxic encephalopathy, and that their theories of organic brain damage are not supported by the scientific literature.

Both prongs of the second argument were raised prior to (and during) trial. After reviewing the materials presented by the parties, the Court ruled against the defendants on both issues.

Since then, the Ninth Circuit has decided two civil cases, the outcome in each hinging on the admissibility of expert testimony. Both opinions discuss the requirements of Rule 702 in light of Daubert v. Merrel Dow Pharmaceuticals, Inc., ____ U.S. ____, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993). Both agree that expert testimony may not be admitted unless the trial judge first determines that the expert's conclusions are based upon scientific knowledge. Hopkins v. Dow Corning Corp., 33 F.3d 1116, 1124 (9th Cir. 1994); Claar v. Burlington Northern R. Co., 29 F.3d 499, 502 (9th Cir. 1994).

Although Hopkins and Claar are clearly relevant here, neither dictates a result different than that previously reached by the Court. As a result, the Court declines to disturb its prior rulings regarding toxic encephalopathy.

C. Sufficiency of Certain Expert Opinions (Background)

The third and fourth arguments challenge the sufficiency of certain expert opinions – primarily those of Dr. Lantsberger. Because this part of the defendants' Rule 50(b) motion attacks sufficiency, it is necessary to describe the disputed opinions in some detail.

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6. Merlin Carlson

Two experts analyzed the symptoms that Merlin Carlson reported. One was Dr. Daniel Goldstein. Although the defendants challenge the admissibility of his testimony on a

number of other grounds, they concede that he testified – on a more probable than not basis – that Mr. Carlson sustained brain damage due to solvent exposure. (Defendants' Memorandum in Support of Renewed Motion at 82.)

The other expert who analyzed Mr. Carlson's symptoms was Dr. Lantsberger. Not only did she testify about respiratory problems (Tr. at 1922-23, 1925-26), but she also testified about fatigue, headaches, "overall body pain," and "whole person" aggravation. (Tr. at 1926, 3143.)

(a) Direct examination of Dr. Lantsberger

On direct, Dr. Lantsberger was asked whether she had an opinion regarding the cause of Mr. Carlson's "problems with breathing." (Tr. at 1925.) She said that she had reached the "same conclusion" with respect to his "breathing problems" that she had reached with respect to his "brain injuries," namely, "[t]hat he has a similar pattern as the other coworkers, and that the overall epidemilogical data leads me to believe that his exposure in the work site is the joining factor of all of the physical problems." (Tr. at 1926.)

Next, Dr. Lantsberger was asked whether there was a relationship between Carlson's complaints of "fatigue, headache, [and] overall body pain" and "exposure to chemicals in 1988." Id. She replied, in part, "The other coworkers complaining of the same, similar respiratory, cognitive, joing and body aches, leads me to assume based on epidemiological look at the exposure, the symptoms beginning about he same time frame and continuing subsequently leads me to believe that they are associated with the exposure." (Tr. at 1926-27.)

(b) Cross-examination of Dr. Lantsberger

Dr. Lantsberger acknowledged that it was during August, 1991, that she last made a note regarding Carlson's complaint if of breathing problems. (Tr. at 2935.) She further acknowledge that Carlson does not have Reactive Airways Dysfunction Syndrome, (Tr. at 2935), and that she has never diagnosed asthma. Id.

With respect to "bone pain and joint aches," she said, "I

don't know what caused these guys to have the aches and pains, but I do now that a significant number of the workers did have them." (Tr. at 2936.)

(c) Re-direct examination of Dr. Lantsberger

Dr. Lantsberger denied that it made sense to look at Merlin Carlson in terms of "isolated incidences [sic]." (Tr. at 3142-43.) Over objection, she testified, "In terms of his entire exposure, his preexisting as, as a consequence of his exposure, I think that his preexisting problems were aggravated by his exposure at Kaiser on a more probable that not basis." (Tr. at 3143.)

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D. Sufficiency of Certain Expert Opinions (Analysis)

A motion for judgment as a matter of law may be granted when "a party has been fully heard with respect to an issue and there is no *legally sufficient evidentiary basis for a reasonable jury to have found for that party* with respect to that issue . . . ." Fed.R.Civ.P. 50(a)(1). See Montiel v. City of Los Angeles, 2 F.3d 335, 342 (9th Cir.1993). The moving party must demonstrate that insofar as the verdict is concerned, the evidence permits but one reasonable conclusion. Conner v. Sakai, 15 F.3d 1463, 1467 (9th Cir.1993).

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6. Merlin Carlson

Mr. Carlson's principal claim was for toxic encephalopathy. He did not stop there, however. Dr. Lantsberger reported breathing problems, fatigue, headaches, and "overall body pain."

With respect to respiratory complaints, Dr. Lantsberger was forced to concede that Mr. Carlson does not have Reactive Airways Dysfunction Syndrome or industrially induced asthma. Similarly, with respect to "bone pain and joint aches," she could only say, "I don't know what caused these guys to have the aches and pains, but I do know that a significant number of the workers did have them." Given the record, a reasonable jury could not have found for Mr.

Carlson on his non-neurological claims.

. . .

E. Sufficiency of Certain Expert Opinions (Conclusion)

In view of the foregoing, the defendants are entitled to judgment as a matter of law on a number of claims. They include the following: all claims asserted by Dan Glass, David Schduel, Craig Thompson and Tim Schudel; all non-respiratory claims asserted by Kathrene Froese; all non-neurological claims asserted by Merlin Carlson; and all non-respiratory claims asserted by the Hopkins.

Although several claims must be dismissed, several remain. The next question is whether a new trial is necessary.

Approximately six weeks prior to trial, the Court asked the plaintiffs to list their claims against the defendants. (Order Re Daubert Procedure (Ct. Rec. 326) at 7.) The plaintiffs declined to do so. (Plaintiffs' Lists of Claims (Ct. Rec. 334).) Instead, they presented the jury with a long list of symptoms, only some of which could be connected to the plaintiffs' work at Kaiser on a more probable than not basis. Furthermore, when it came time to instruct the jury, the plaintiffs rejected a suggestion that the jurors be asked to decide specific claims.

The plaintiffs' choice of tactics has placed the Court in an awkward position. Because the jurors were not asked to return verdicts with respect to each plaintiff's individual claims, it is now impossible to separate the wheat from the chaff. Thus, the Court is forced to conclude that the verdicts in favor of Kathrene Froese, Merlin Carlson, Ruth Hopkins and John Hopkins are too tainted to stand. For that reason, the plaintiffs' remaining claims must be re-tried.

III. DEFENDANTS' MOTION FOR NEW TRIAL

The defendants give twelve reasons why the Court should order a new trial. Fed.R.Civ.P. 59. They include the following: First, by urging the jury to "send a message" to the defendants, the plaintiffs injected irrelevant, arbitrary, and punitive considerations into the jury's deliberations. Second, the Court failed to instruct the jury on Washington's medical

causation standard. Third, the Court's instructions with respect to state and federal safety regulations were in error. Fourth, the Court failed to instruct the jury on the limited duties of the employer of an independent contractor. Fifth, the plaintiffs violated a pretrial order by introducing evidence regarding Daniel Skeman. Sixth, the Court applied Bryan v. John Bean, 566 F.2d 541 (5th Cir.1978), in an improper manner. Seventh, the defendants should have been allowed to cross-examine the plaintiffs regarding inconsistent statements made to Diane Nebel. Eight, the plaintiffs should not have been allowed to offer evidence regarding symptoms experienced by non-plaintiff workers. Ninth, the plaintiffs were permitted to suggest that a defense expert had no basis for opining that Mrs. Hopkins's depression had a cause other than that suggested by her experts. Tenth, the jury's verdict was against the weight of the evidence. Eleventh, the damages awarded were excessive both as a matter of fact and a matter of law. Twelfth, the defendants' right to cross-examination was violated.

Given the Court's various rulings with respect to the defendants' motion for judgment as a matter of law, the defendants' alternative request for a new trial is moot with respect to all but Deborah Williams. Insofar as she is concerned, the defendants' motion is denied.

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V. MOTION TO AMEND VERDICT

Kaiser Aluminum and Chemical Corporation is one legal entity; Kaiser Aluminum Corporation is another. Since at least October, 1991, it is Kaiser Aluminum and Chemical Corporation which has been one of the two named defendants in this action.

The jury returned its verdict on July 13, 1994. Judgment was entered that same day. The judgment refers to Kaiser Aluminum Corporation, not Kaiser Aluminum and Chemical Corporation.

Defendant Kaiser Aluminum and Chemical Corporation now moves the Court, pursuant to Rule 60, to amend the

judgment to reflect its true name. The plaintiffs do not object.

Kaiser aluminum and Chemical Corporation is correct. The wrong corporate entity was listed in the judgment. As a result, its motion will be granted and the judgment modified accordingly.

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VII. MOTION TO STAY EXECUTION OF JUDGMENT

The defendants move the Court to stay any proceedings to enforcement the judgment pending resolution of their post-trial motions. Fed.R.Civ.P. 62(b). With entry of this order, the defendants' request becomes moot. It will therefore be denied.

IT IS HEREBY ORDERED:

1. The plaintiffs' motion to strike defense motions as untimely **(Ct. Rec. 536)** is **denied.**

2. The defendants'motion to strike plaintiffs' memorandum **(Ct. Rec. 565)** is **denied.**

3. The plaintiffs' motion to strike reply **(Ct. Rec. 552)** is **denied.**

4. The defendants' motion for judgement as a matter of law **(Ct. Rec. 488)** is **denied** in part and **granted** in part. The judgments entered herein are re-opened and modified as follows:

(a) The defendants are granted judgment as a matter of law on all claims asserted by Dan Glass, David Schudel, Craig Thompson and Tim Schudel. Those claims are dismissed with prejudice.

(b) The defendants are granted judgment as a matter of law on all non-respiratory claims asserted by Kathrene Froese. Those claims are dismissed with prejudice.

(c) The defendants are granted judgment as a matter of law on all non-neurological claims asserted by Merlin Carlson. Those claims are dismissed with prejudice.

(d) The defendants are granted judgment as a matter of law on all non-respiratory claims asserted by Ruth Hopkins and John Hopkins. Those claims are dismissed with

prejudice.

5. The defendants are granted a new trial on all remaining claims.

6. The defendants' motion for new trial or alternative relief **(Ct. Rec. 486)** is **denied**.

7. The plaintiffs' timely request for attorneys' fees and costs shall have the same effect under Fed.R.App.P. 4(a)(4) as a Rule 59 motion, and the period for filing a notice of appeal shall be extended accordingly.

8. The plaintiffs' request for attorneys' fees and costs is **denied** in part and **granted** in part. Ms. Deborah Williams is directed to submit a revised cost bill.

9. Defendant Kaiser Aluminum and Chemical Corporation's motion to amend or correct judgments **(Ct. Rec. 513)** is granted. The judgments entered herein shall refer to "Kaiser Aluminum and Chemical Corporation," not "Kaiser Aluminum Corporation."

10. The plaintiffs' motion for order shortening time **(Ct. Rec. 555)** is **denied**.

11. The plaintiffs' motions for order setting hearing on discovery abuses **(Ct. Recs. 534 and 563)** are **denied**.

12. The defendants' motion for stay of proceedings to enforce judgments **(Ct. Rec. 490)** is **denied.**

IT IS SO ORDERED. The Clerk is hereby directed to file this order, enter judgment accordingly, and furnish copies to counsel.

DATED this 22 day of November 1994.

/s/_____
FRED VAN SICKLE
United States District Judge

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs,	)	NO. CS-92-0081-AM
vs.	)	**ORDER**
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	**DISMISSING CERTAIN CLAIMS, INTER ALIA**

A show cause hearing was conducted on March 2, 1999. Marcia Meade, Esq., appeared on behalf of plaintiff Merlin Carlson. Craig F. Schauermann, Esq., appeared on behalf of plaintiffs David Schudel, Tim Schudel, Sandra Schudel, Daniel Glass, Craig Thompson, Deborah Williams and Kathrene Froese. Thomas C. Phelan, Esq., appeared on behalf of plaintiffs John Hopkins and Ruth Hopkins. James B. King, Esq., and Donald W. Fowler, Esq., appeared on behalf of defendants General Electric Co. and Kaiser Aluminum and Chemical Corporation.

I. BACKGROUND

On November 19, 1998, this court entered an order (Ct. Rec. 750) directing seven of the ten plaintiffs identified above to show cause why certain of their claims should not be dismissed with prejudice as a result of the decision of the Ninth Circuit Court of Appeals in Schudel v. General Elec. Co., 120 F. 3d 991 (9th Cir. 1997).[17]

The background of this case is set forth in the Ninth Circuit's decision. Nine of the ten plaintiffs were employees of General Electric Co. which contracted to clean up

[17] The circuit's mandate issued in December 1997. (Ct. Rec. 724 and 725). Subsequently, a petition for writ of certiorari was denied by the U.S. Supreme Court, 118 S.Ct. 1560 (1998).

polychlorinated biphenyls (PCBs) at Kaiser Aluminum and Chemical Company[18]. Plaintiffs allege they developed various neurological and respiratory problems from exposure to two cleaning solvents, trichloroethane (TCA) and perchloroethylene (Perc).[19] After an approximately 60 day trial spanning from April 14, 1994 to July 13, 1994, a jury returned a verdict for the plaintiffs. Schudel, 120 F. 3rd at 993.

The defendants moved for JNOV (judgment notwithstanding verdict) or new trial. The Honorable Fred Van Sickle affirmed the verdict in favor of plaintiff Deborah Guaragna-Williams (hereinafter "Williams").[20] Judge Van Sickle granted JNOV with respect to the respiratory injury component of the claim by plaintiff Merlin Carlson. He also granted JNOV with respect to the neurological injury component of the claims by plaintiffs Kathrene Froese (aka Kathrene Howell), John Hopkins and Ruth Hopkins (collectively known as the Froese plaintiffs"). Judge Van Sickle ordered a new trial with regard to the injury components of the claims of Carlson and the Froese plaintiffs on which JNOV was not granted. He ordered a new trial for Carlson on the neurological injury component of his claim. For the Froese plaintiffs, a new trial was ordered on the respiratory injury component of their claims. Lastly, Judge Van Sickle granted JNOV on the claims asserted by the remaining plaintiffs: David Schudel, Tim Schudel, Sandra Schudel, Daniel Glass and Craig Thompson (collectively known as the "Schudel plaintiffs). Id. Both plaintiffs and defendants appealed Judge Van Sickle's November 5, 1994 "Order Re Post-Trial Motions" pursuant to his Fed. R. Civ. P.

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[18] Sandra Schudel was not an employee. She is the wife of Tim Schudel and claims loss of consortium.

[19] The asserted injuries in this case are divided into two different groups: 1) neurological injuries including headaches and rashes; and 2) respiratory injuries including fatigue and overall body pain. 120 F.3rd at 993, n. 2 and 3.

[20] She now goes by the married name of "Deborah Hayes."

54 (b) certification.

The Ninth Circuit ruled it did not have jurisdiction to consider the appeals from Judge Van Sickle's order granting JNOV and new trial with regard to the claims of Carlson and the Froese plaintiffs. The circuit noted it had jurisdiction to review final judgments on entire claims and that an order adjudicating only one issue that is not determinative of an entire claim is not appealable even if the district court certifies the order under Fed. R. Civ. P. 54 (b). Id at 994-5. The circuit found Carlson and Froese alleged a single claim of negligence, not separate claims for neurological injury and respiratory injury. Therefore, the circuit did not have jurisdiction to review the JNOV granted solely on the respiratory injury component of Carlson's negligence claim, nor the JNOV granted solely on the neurological injury component of Froese's negligence claim. Likewise, the circuit found John and Ruth Hopkins alleged claims for negligence and loss of consortium, not separate claims for neurological and respiratory injury as to each claim. Therefore, the circuit did not have jurisdiction to review the JNOV granted solely on the neurological injury component of the Hopkins' negligence and loss of consortium claims.

Consequently, Judge Van Sickle's "Order Re Post-Trial Motions" remains in effect to the extent it is necessary to proceed with a new trial on the respiratory injury component of the claims of Kathrene Froese, John Hopkins and Ruth Hopkins.[21] Although Judge Van Sickle's order anticipated a new trial on the neurological injury component of Carlson's claim, the Ninth circuit's finding that certain neurological causation evidence presented at trial is scientifically unreliable raises a question whether any scientifically reliable evidence remains to support the neurological injury component of

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[21] At the appropriate time, the Froese plaintiffs may proceed with an appeal of the JNOV which was granted on the neurological injury component of their claims. At this time, the court is not obliged to afford them a new trial on that component of their claims.

Carlson's claim.[22]

In considering defendants' motion for JNOV, Judge Van Sickle "exercised" the "whole person aggravation theory" of causation testified to at trial by Paula Lantsberger. Judge Van Sickle found this theory was not scientifically reliable under the Daubert standard.[23] and therefore, that Dr. Lantsberger's testimony regarding this theory has been admitted erroneously. In addition to the "whole person aggravation theory," Dr. Lantsberger offered causation testimony under a separate theory known as the "specific condition causation theory." Dr. Lantsberger was the only witness on causation on behalf of the Schudel plaintiffs. Judge Van Sickle considered the sufficiency of the remaining causation evidence (excluding the "whole person aggravation" testimony) and granted the motion for JNOV on all of the claims asserted by the Schudel plaintiffs. The Ninth Circuit found this to be error and held that when ruling on a JNOC motion, a district court should not exclude evidence erroneously admitted at trial. Schudel, 120 F. 3d at 995.

Considering all of the evidence admitted at trial, including Dr. Lantsberger's "whole person aggravation" theory, the circuit concluded there was sufficient evidence to render a verdict in favor of the Schudel plaintiffs. However, the circuit also held those verdicts could not stand, agreeing with Judge Van Sickle that Dr. Lantsberger's testimony based on the "whole person aggravation" theory of causation did not meet the Daubert standard. Therefore, the circuit held Judge Van Sickle should have granted defendants' motion for a new trial on the claims of the Schudel plaintiffs. Id at 996.

Finally, the Ninth Circuit held that the neurological symptom causation testimony of Dr. William Morton, Dr. Daniel Goldstein, and Dr. Lantsberger, underlying the jury

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[22] JNOV was granted on the respiratory injury component of Carlson's claim and hence, this court is not obligated, at this time, to provide him a new trial on that component of his claim.

[23] Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 113 S.Ct. 2786 (1993).

verdict for plaintiff Deborah Williams, was not admissible under the Daubert standard. Considering all the evidence admitted at trial, including the erroneously admitted evidence, the circuit held that Judge Van Sickle properly denied defendants' motion for JNOV as to Williams. However, admission of the challenged expert testimony was prejudicial because it was the sole causation evidence with regard to Williams' neurological symptoms. Id. at 996-7.

Based on the circuit's opinion, this court's November 19, 1998 order (Ct. Rec. 750) specifically directed plaintiffs to show cause as follows:

1) Plaintiff Williams was required to show what then available and admissible causation evidence she would have presented at trial to withstand a directed verdict on the neurological injury component of her claim, if the neurological injury causation evidence found legally insufficient by the circuit had been excluded from said trial. In other words, Williams is obliged to show cause why the neurological injury component of her negligence claim should not be dismissed with prejudice.

2) Plaintiff Carlson was required to show that causation evidence he presented, or could have presented, during trial is materially different from the neurological injury causation evidence found insufficient as a matter of law by the circuit. In other words, Carlson is obligated to show why the neurological injury component of his negligence claim should not be dismissed with prejudice if it is based on the same evidence found insufficient as a matter of law by the circuit.

3) The Schudel plaintiffs were required to show that if the causation testimony of Dr. Lantsberger regarding the "whole person aggravation" theory had been excluded prior to trial, they would have presented then available and admissible evidence sufficient to withstand a directed verdict on their claims (both the neurological and respiratory components thereof). In other words, the Schudel plaintiffs are obligated to show why their claims should not be dismissed with prejudice in their entirety.

II Discussion

In response to the court's show cause order, plaintiffs submitted affidavits and declarations from certain of their experts who testified at the trial: Dr. William Morton, Dr. Paula Lantsberger, and Dr. Daniel Goldstein. They also submitted declarations from two new experts who did not testify at the trial: Dr. Kaye Kilburn and Dr. Geoffre A. Kelafant.

Plaintiffs do not dispute that this court is obligated to follow the mandate of the Ninth Circuit and may not reconsider or reverse the circuit's opinion. The most compelling of the law of the case rules is the "mandate" rule. Casey V. Planned Parenthood, 14, F. 3d 848, 856 (3rd Cir. 1994). The obligation of every court to honor the rulings of a court that stands higher in a hierarchical judicial structure is "fundamental." Charles A. Wright, et al., 18 Federal Practice and Procedure, § 4478 at p. 788 (1981). An inferior court has no power or authority to deviate from the mandate issued by an appellant court. Briggs v. Pennsylvania R. Co., 334 U.S. 304, 306 (1948). The inferior court is bound by the higher court's decree as the law of the case and must execute it according to the mandate. The inferior court may not vary the decree, "nor examine it for any purpose other than execution; nor give any other or further relief; nor review it upon any matter decided on appeal, for error apparent; nor intermeddle with it, further than to settle so much as has been remanded." Sibbald v. United States, 37 U.S. (12 Pet.) 488, 9 L.Ed. 1167 (1838). The mandate rule requires a district court to follow an appellate court's resolution of an issue of law in all subsequent proceedings in the same case. It applies to the appellate court's explicit decisions, as well as those issues decided by necessary implication. United States v. Cote, 51 F. 3d 178, 181 (9th Cir. 1995). 18 Federal Practice and Procedure, §4478 at p. 793.

Plaintiffs assert the circuit's opinion provided their experts with an opportunity to "fill gaps" in the scientific evidence identified by the circuit. According to plaintiffs, this

is apparent from the fact the circuit did not dismiss any of the plaintiffs' claims. Plaintiff contend the affidavits and declarations of their experts sow they are prepared to "fill the gaps" identified by the circuit.

Affidavit of Dr. William Morton

At trial, Dr Morton testified that plaintiff Williams suffered from solvent induced toxic encephalopathy which "more probably than not" was caused b exposure to Perc and TCA. The Ninth Circuit found Dr. Morton's testimony did not meet Daubert's reliability requirement.[24] Schudel, 120 F. 3d at 996-97. According to the circuit:

Dr. Morton's conclusions were based on an extrapolation from studies that: (1) involved organic solvents other than TCA or Perc; and (2) examined long-term exposure at relatively low chemical concentrations, rather than the sort-term, moderate level exposure sustained by Williams. Dr. Morton did not establish it was scientifically acceptable to draw general conclusions about the neurotoxicity of TCA and Perc from studies of other chemicals; indeed, the testimony indicated small differences in molecular structure often have significant consequences.

As to differences in length and intensity of exposure, the district court erroneously reasoned that because there was evidence that acute exposure to TCA and Perc can cause toxic encephalopathy, whether Williams' exposure was sufficient to cause her symptoms was a question for the jury. Williams exposure was neither long enough nor intense enough to fall within the ranges described in the studies Dr. Morton relied upon. Extrapolation was necessary to make the studies relevant, and there was no showing the necessary extrapolation was scientifically acceptable.

Id. at 997.

Plaintiffs argue the circuit intended on remand to provide Dr. Morton with an opportunity to make a "showing the necessary extrapolation was scientifically acceptable." This

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[24] Daubert has two requirements: 1) scientific evidence must be reliable and 2) it must be relevant to the legal inquiry at hand.

court is not persuaded. It is clear the circuit found the particular extrapolation testified to by Dr. Morton was not scientifically reliable. The circuit did not say the extrapolation could potentially be reliable. The very issue presented on appeal was the admissibility of Dr. Morton's neurological causation testimony under Federal Rules of Evidence 702. Id. at 996. The circuit ruled it was inadmissible, not that it might be admissible. This court believes that if the circuit intended to extend an invitation to plaintiffs' experts to fill gaps in the scientific evidence, the circuit would have done so explicitly.

The court is compelled to conclude that Dr. Morton's affidavit represents nothing more than an attempt to reargue the particular extrapolation already declared unreliable by the circuit. Simply put, Dr. Morton contends the circuit's decision is wrong. In paragraph 4 of his affidavit, Dr. Morton indicates he has reviewed the circuit's decision and summarizes what the circuit found scientifically unreliable about his trial testimony: 1) not scientifically acceptable to draw general conclusions about the neurotoxicity of TCA and PERC from studies of other organic solvents; and 2) failure to demonstrate extrapolation as a scientifically acceptable methodology.

In paragraphs 5 through 8, Dr. Morton offers a defense of the extrapolation method he used which was rejected by the circuit. According to Dr. Morton:

The extrapolation method that I **used**, took into account that we know that: 1) low-dose long-term exposure causes injuries; and 2) high-dose, very short-term exposures cause injuries; and, 3) case reports demonstrate that medium-dose, medium-exposure levels (such as those received by (Williams) and her fellow workers) cause harm. This information tied with the physical symptoms, a review of the individual history, a physical exam and testing, allowed me to reasonably **conclude** that these organic solvents were the cause of the injuries that were clearly found to exist in (Williams). **In addition to the cause reports tat I testified to both in my prior offer of proof and at the time of trial**, I enclose an

additional case report that is extremely similar to the outcomes and injuries reported by (Williams) and the other workers at this site. R Singer, Neurotoxicity Guidebook, 94-99 (1990).

(Emphasis added).

The Singer text was available to Dr. Morton at the time of trial and was cited by him as part of his "Offer of Proof" filed prior to the commencement of trial in1994. (Ex. 2 to Affidavit of William Morton at p. 4). As defendants point out, a case report from Singer was discussed at trial. (Ex. 3 to Affidavit of William Morton at pp. 5373 to 5382). According to defendants, the "additional case report" referred to by Dr. Morton in his affidavit (attached as Ex. 5 to the affidavit), is the same case report from Singer which was discussed at trial. That appears to be true.

At Trial, Dr. Morton, Dr. Morton acknowledged the case report from Singer involved an individual, identified with a fictitious name, who was exposed for six or seven months in a 12 x 24 feet enclosed room. As is apparent from Ex. 5 attached to Dr. Morton's affidavit, "Mr. Small" is the fictitious name of an individual who worked as a degreasing technician from February 1985 through August 1985 (seven months) and who was exposed to TCA while working in a 12 x 24 feet enclosed room. Consequently, the case report of "Mr. Small" does not qualify as other evidence, available and admissible at the time of trial, sufficient to withstand entry of a directed verdict for defendants.

All of the textual references in Dr. Morton's affidavit are dated prior to 1994 and therefore, would have been available prior to trial for consideration in an scientific analysis. With a few exceptions, the references contained in the affidavit are the same as those contained in Dr. Morton's pre-trial offer of proof. One of the exceptions is Casarett and Doul, Toxicology, The Basic Science of Poisons, Fourth Ed., 1991).[25]

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[25] The other exceptions appear to be Occupational Toxicology, Chapter 11 (N.H. Stacey, Ed., 1993), and Gerr and Letz,

In his affidavit, Dr. Morton cites Casarett and Doul as support for the proposition that proposition that extrapolation "is a widely" accepted scientific principle and methodology;" that a variety of models are used by scientists;" and "(t)he appropriate method to be used is determined by the facts and what is known about the chemicals."

In paragraph 6 of his affidavit, Dr. Morton explains why he believes the extrapolation he employed on behalf of plaintiff Williams was proper:

. . . **we had the additional benefit in the extrapolation <u>that I used at the time of trial</u>**, of a great deal of anecdotal evidence that verified the extrapolation method in the medium-dose, medium-exposure range. This was not a simple extrapolation without ancillary information. The ancillary information tied with the peer review studies **assisted** us in verifying the extrapolation results. In this matter, we also had the benefit of neuropsychological studies that clearly demonstrated that (Williams) suffered from organic brain syndrome. This type of syndrome is one which one might (expect) a person to be suffering from as a result of this type of exposure. We **had** Dr. Breysee's testimony that the exposure levels were five to ten times the permissible exposure limits. We **knew** the approximate amount of time of exposure that (Williams) as well as the other workers. We **had** demonstrable pulmonary effects from the exposure and we **knew** that the exposure involved organic solvents that were used at the work site which were perfectly compatible with the findings that were made.

(Emphasis added).

As is plainly evident, Dr. Morton merely attempts to bolster the extrapolation method which he testified to during the 1994 trial and which on appeal, the Ninth Circuit declared scientifically unreliable. This conclusion is reinforced by paragraph 8 of Dr. Morton's affidavit in which he asserts he "took" various factors and information into account in reaching his conclusions and that his extrapolations are

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<u>Environmental and Occupational Medicine</u>, Chapter 66 (1992).

scientifically acceptable because of "the affinity of all organic solvents for fatty neural tissue."

In paragraph 7 of his affidavit, Dr. Morton discusses how the federal Food and Drug Administration uses extrapolation as a means of determining whether certain chemicals can be used by humans. That says nothing about the reliability of the specific extrapolation for use in prospective policy decision is quite different from using an extrapolation to help answer the retrospective inquiry of whether a particular exposure caused a particular injury on a more probable than not basis. Allen v Pennsylvania Engineering Corp., 102 F 3d 194, 198 (5th Cir. 1996).

In paragraph 9 of his affidavit, Dr. Morton acknowledges the fact the circuit "was also concerned about the use of studies of other organic solvents as a means of determining the toxicity of TCA and PERC." He goes on in paragraphs 9 and 10 to defend his use of other organic solvents. These paragraphs confirm yet again that the purpose of Dr. Morton's affidavit is not to show what other admissible evidence, available at the time of trial, would have been sufficient to withstand a directed verdict on the neurological injury claims.

Perhaps Dr. Morton is justified in his perception that he has been wronged by the circuit. However, that is not something which Dr. Morton or this court can do anything about at this point in the proceedings. This court is obliged to follow the circuit's rulings, regardless of whether there is any validity to Dr. Morton's post-mortem defense of his extrapolation methodology.

Declaration of Dr. Daniel Goldstein

The Ninth Circuit had this to say about Dr. Goldstein's trial testimony:

Dr. Goldstein conceded that only five organic solvents, none of which were involved in this case, had been proven to be neurotoxic. He also testified that it would be improper to infer conclusions as to the toxicity of other solvents, and that repeated exposure to nonpersistent toxins such as organic

solvents over a long period must be documented to establish a causal relationship.

Dr. Goldstein acknowledged that the biochemical mechanism of neurotoxicity from TCA and Perc has not been demonstrated. Only two studies by Dr. Goldstein involved TCA and Perc, and neither met Daubert standards. The Altman study found no relationship between exposure to Perc and the toxic encephalopath or loss of consciousness alleged by plaintiffs. The Kalifant study involved long-term (7-15 years), repetitive exposures to TCA at high levels.

Schudel, 120 F. 3d at 997. Accordingly, the circuit found scientifically unreliable Dr. Goldstein's testimony that Perc and TCA exposure caused neurological injuries in plaintiff Williams.

Paragraph 5 of Dr. Goldstein's declaration asserts as follows:

The Ninth Circuit Court of Appeals has apparently been mislead on my opinions and has taken my opinions out of context. . . . I have requested counsel to (provide to this Court a copy of my testimony that shows the Schudel opinion to be wrong as to myself.

In the paragraphs of his declaration which follow, Dr. Goldstein attempts to sow how the Ninth Circuit erred in excluding his testimony. For example, in paragraph 7, Dr. Goldstein attempts to show how the Ninth Circuit erred in excluding his testimony. For example, in paragraph 7, Dr. Goldstein asserts the circuit "overlooked my testimony that there were other organic solvents present at the 1988 PCB Kaiser Trentwood clean-up" which "are known and have been scientifically shown to cause neurological injuries." He asserts "the method I **used** to analyze and apply the scientific literature to the facts of the case are scientifically recognized." (Paragraph 15) (Emphasis added). He takes issue with the circuit's emphasis on the fact that the biochemical mechanism of neurotoxicity from TCA and Perc has not been demonstrated. (Paragraph 21). He claims that while he may

have conceded that 25 years ago there were only five organic solvents proven to be neurotoxic, that did not mean the same was true in 1994 at the time of the trial. (Paragraph 22). Dr. Goldstein refers to the information he cited to the court prior to and during the 1994 trial as showing that TCA and Perc exposure causes neurotoxic injuries. (Paragraphs 8, 9 and 11).

The concluding paragraph of Goldstein's declaration states:

The opinion of the {circuit} in Schudel v. General Electric has taken my testimony out of context and also not considered 98% of my reference in the well recognized peer-reviewed scientific and medical literature that supported your opinions. The circumstances of the 1988 PCB cleanup involved chemicals that were known to and did [injure] the workers of the clean-up.

This court fails to find any reference in Dr. Goldstein's declaration to causation evidence which was presented, or which could have been presented at the 1994 trial, that is **materially different** from the evidence which was before the circuit.[26] This court is simply not in a position to question the correctness of the circuit's ruling even if it was persuaded the circuit misinterpreted Dr. Goldstein's trial testimony or failed to consider all of that testimony.

In her "Declaration on Dr. Daniel A. Goldstein's Testimony," Marcia Meade, Esq., counsel for plaintiff Carlson, echoes the statements in Dr. Goldstein's declaration and claims that "[a] major problem with the court of appeals decision as to Merlin E. Carlson, Jr., is the Ninth Circuit has made statements, where the record is absolutely contrary to the Schudel Court's statement." Counsel asserts "the Court of Appeals must not have reviewed the record he cited."[27]

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[26] This includes Dr. Goldstein's identification of chemicals present at the clean-up, other than TCA and Perc. (Paragraph 17 of Goldstein Declaration).

[27] The declarations of Dr. Goldstein and counsel clearly reveal their argument concerns the correctness of the circuit's decision

Whatever the truth of counsel's allegations, the fact remains there is nothing this court can do about it. The remedy for any error in the circuit's opinion was a petition for rehearing and/or a petition for writ of certiorari. Indeed, counsel (Ms. Meade) petitioned for rehearing en banc before the circuit which was denied. (Appendix 3 to Defendant's Response).

Declaration of Dr. Paula Lantsberger

The Ninth Circuit said this about Dr. Lantsberger's testimony regarding plaintiff Williams:

Dr. Lantsberger's testimony failed to meet Daubert's relevance requirement. She testified it was only a 'possibility,' not a 'probability,' that Williams' exposure suffered organic brain damage from exposure to solvents at the facility. Dr. Lantsberger admitted she could not testify to a specific cause and effect relationship between Williams' exposure and health problems. She relied instead on a 'whole person aggravation' theory without establishing that the theory had a scientific basis.

Dr. Lantsberger's testimony regarding the hazards of TCA and Perc was inadmissible under Daubert. Dr. Lantsberger, like Dr. Goldstein, relied on the Altman and Kalifant articles to reach her neurotoxicity conclusions, and like Dr. Goldstein admitted that medical science has not determined the effects of short-term exposure to the solvents involved.

Schuel, 120 F. 3rd at 997.

As discussed previously, Dr. Lantsberger, in addition to testifying on behalf of plaintiff Williams, was the "only witness on causation on behalf of the Schudel plaintiffs." She offered specific testimony regarding causation under two theories: 1) a specific condition causation theory; and 2) " whole person aggravation" theory. Id. at 995. The_circuit agreed with

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based on the record existing before the circuit. Their argument is not that Dr. Goldstein should be entitled to present at a re-trial "newly discovered evidence" consisting of facts existing at the time of the initial trial, but of which he was excusably ignorant.

Judge Van Sickle that Dr. Lantsberger failed to establish any scientific basis for her "whole person aggravation" theory.

Neurological Injury

The declaration submitted by Dr. Lantsberger in response to the show cause order says nothing about the neurological injury component of Williams' negligence claim. Rather, the declaration refers to Merlin Carlson and the Schudel plaintiffs. The majority of the declaration discusses respiratory injuries. The last two paragraphs of the declaration (Paragraphs 14 and 15) refer to neurological injuries:

> During pre-trial and in trial . . . I identified for the Court Dr. Sullivan's text.[28] In that text, there is a description of 'Solvent Syndrome' . . . . Solvent Syndrome is a condition that has been known for more than 100 years. In Chapters 64 and 106 of [the] Sullivan text there are multiple peer reviewed articles present in the bibliography of each one of those chapters. It is my opinion on a more probable than not basis that Merlin Carlson, Dan Glass, Craig Thompson, David Schudel, Tim Schudel, and Kathrene Howell Froese more probably than not have Solvent Syndrome due to their exposure to the toxic chemicals at the 1998 PCB cleanup.
>
> I have reviewed Dr. William Morton's [affidavit' identifying the fact that physicians recognize and routinely use extrapolation to correlate injuries to humans from toxic substances. I am familiar with Casarett and Doul's textbook Toxicology, The Basic Science of Poisons. In fact, I use a copy of that myself. I agree with the opinions that Dr. Morton has expressed as to the use of extrapolation and how extrapolation is used with physicians.
>
> (Emphasis added).

There is nothing here in the way of admissible causation evidence, available at the time of trial, which Dr. Lantsberger could have presented on behalf of plaintiff Williams, in lieu of

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[28] Hazardous Materials Clinical Principles Environmental Health, (Sullivan, Ed. 1992).

the evidence found inadmissible by the circuit, which would have been sufficient to withstand a directed verdict on the neurological injury component of Williams' negligence claim.

With regard to Carlson and the Schudel plaintiffs, all Dr. Lantsberger provides is a wholly conclusory opinion that they "more probably than not" have Solvent Syndrome due to their exposure to the toxic chemicals at the 1988 PCB cleanup. Dr. Lantsberger makes no attempt to show how what is contained in the Sullivan text can allow her to reach such a conclusion with regard to these plaintiffs.

Furthermore, Dr. Lantsberger states she identified the Sullivan text during pre-trial and trial and therefore, presumably relied upon it in her testimony regarding the potential hazards of TCA and Perc. As noted, the circuit found Dr. Lantsberger's testimony in that regard was inadmissible under Daubert because she admitted medical science had not yet determined the effects of short-term exposure to TCA and Perc. Therefore, Dr. Lantsberger has no reliable scientific basis for opining that TCA and Perc exposure is the "more probable than not" cause of the neurological injuries allegedly sustained by Carlson and the Schudel plaintiffs.

Dr. Lantsberger states she agrees with Dr. Morton's extrapolation analysis. The Ninth Circuit found that analysis scientifically unreliable. As noted above, Dr. Morton's affidavit merely alleges the circuit's finding was in error. Dr. Morton offers no other admissible evidence, available at the time of trial, to support his conclusion that TCA and Perc exposure "more probably than not' caused Williams' solvent-induced toxic encephalopathy.

The court agrees with defendants that Dr. Lantsberger's opinion of TCA and Perc exposure being a "more probable than not" cause of neurological injuries allegedly sustained by Carlson and the Schudel plaintiffs is inconsistent with certain testimony she gave during trial. In his "Order Re Post-Trial Motions," Judge Van Sickle noted that on direct examination, Dr. Lantsberger testified she had reached the "same

conclusion" with respect to Carlson's "breathing problems" that she had reached with respect to his "**brain injuries**," in [t]hat he has a similar pattern as the other coworkers, and that the overall epidemiological data leads me to believe his exposure in the work site is the joining **factor** of all the physical problems." (Order at p. 25) (Emphasis added). Dr. Lantsberger added:

> The other coworkers complaining of the same, similar respiratory, **cognitive**, joint and body aches, leads me to assume based on epidemiological look at the exposure, the symptoms beginning about the same time frame, and continuing subsequently leads me to believe that they are **associated** with the exposure.

(Id.) (Emphasis added).

However, Judge Van Sickle also noted that on re-direct examination, Dr Lantsberger testified, over objection, that Carlson's "pre-existing problems were aggravated by his exposure at Kaiser on a **more probable than not basis**." (Id. at 26) (Emphasis added). Judge Van Sickle granted JNOV only on the respiratory injury component of Carlson's claim. He did **not** grant JNOV on the neurological injury component, finding that a reasonable jury could have found for Carlson on that issue. Rather, Judge Van Sickle granted a new trial on the neurological injury component of Carlson's claim because the verdict did not distinguish between respiratory and neurological injuries.

In not granting JNOV on the neurological injury component, Judge Van Sickle necessarily had to find there was enough reliable and relevant scientific evidence for a jury to reasonably conclude Carlson's exposure caused his injury. However, the Ninth Circuit's opinion, finding unreliable the neurological causation testimony of Drs. Morton, Goldstein and Lantsberger, leaves no reason to hold a new trial on the neurological injury component of Carlson's claim.[29] Carlson

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29 Judge Van Sickle did not rule that Goldstein and Morton's testimony was inadmissible. Hence, the defendants appealed to the Ninth Circuit seeking to have it declared inadmissible. Judge Van

has not identified any other admissible scientific evidence, available at the time of trial, to support the neurological injury component of his claim. Therefore, he has failed to show cause why that component of his claim should not be dismissed with prejudice.

The same holds true for the Schudel plaintiffs and the neurological injury component of their claims. Dr. Lantsberger provided the **only** causation evidence on behalf of the Schudel plaintiffs. Her neurological causation trial testimony was scientifically unreliable and there is nothing in he declaration showing she could have provided other reliable and relevant evidence (i.e. admissible evidence) at the time of trial in support of the neurological injury component of the claims of the Schudel plaintiffs.[30]

Sickle did rule that Lantsberger's "whole person aggravation" theory of causation was inadmissible.

[30] In his "Order Re Post-Trial Motions," Judge Van Sickle questioned not only the scientific reliability of Lantsberger's "whole person aggravation" theory, but also the relevance of her neurological causation trial testimony
With respect to Dan Glass, Judge Van Sickle found:

Regarding headaches and memory loss, Dr. Lantsberger was forced to concede that she had been unable to find a cause-and-effect relationship between Glass' participation in the Kaiser cleanup and his subsequent complaints. Thus, her testimony concerning those conditions falls short of the O'Donoghue standard [act complained of probably or more likely than not caused the subsequent disability] .
(Order at p. 29).

With respect to David Schudel, Judge Van Sickle found it was "undisputed that Mr. Schudel did not sustain neurologic injury as a result of his participation in the Kaiser cleanup" and therefore, "a reasonable jury could not have found him on that issue." (Order at p. 30).

With respect to Craig Thompson, Judge Van Sickle found:

Dr. Lantsberger failed to link any of Mr. Thompson's specific complaints to the Kaiser project on a more-probable-than-not basis. Her-fall-back was "aggravation," a theory which does not meet the

Respiratory Injury Claims

Dr. Lantsberger states that during her pre-trial depositions, defense counsel asked her questions about documents depositions, defense counsel asked her questions about documents in files that were part of the workers' compensation claims of David Schudel, Tim Schudel, Dan Glass, Craig Thompson, Merlin Carlson, and Kathrene Howel Froese. (Declaration at paragraph 4). Dr. Lantsberger notes that in workers' compensation, there is a regulation requiring a physician to consider "whole body aggravation." (Declaration at paragraph 6). According to her:

During my trial testimony, I believe that matters became somewhat confusing because the defense attorneys were asking me about portions of my deposition which dealt with workers' compensation. Defendants were apparently objecting when I answered questions in terms of how the Department of Labor and Industries would address the matter. During the course of my testimony I tried to explain to the Court and to counsel that there is a difference between what I do as a physician treating a patient as it would be in civil litigation and what is done to answer the questions in connection with a workers' compensation claim.

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standards for admissibility established by Rule 702. It follows that the jury's verdict in Mr. Thompson's favor was based upon speculation, nothing more.
(Order at p. 32).

With respect to Tim Schudel, Judge Van Sickle found:

Tim Schudel obtained neuropsycological testing. While the psychologist reported that it was possible that Schudel's previous learning disabilities had been aggravated, he could not say that aggravation was reasonably certain. Indeed, as soon as Schudel was counseled regarding the report's findings, he quit complaining of memory loss. Given those undisputed facts, a reasonable jury could not have found for Mr. Schudel on the question of neurological injury.

That leaves Dr. Lantsberger's aggravation theory. It is neither scientifically or causally sufficient to support the jury's verdict.
(Order at p. 33).

(Declaration at paragraph 7).

Dr. Lantsberger goes on to say that plaintiffs' counsel has provided her with certain Washington Pattern Jury Instructions (WPI 3rd 30.17 and 30.18) regarding Washington law on aggravation of pre-existing condition. She asserts these instructions have "helped clarify for me the difference between what is done in a workers' compensation claim and what is done in civil litigation." (Declaration at paragraph 10). Based on these instructions, Lantsberger asserts: 1) David Schudel, "on a more medical probable basis, had an aggravation of his pre-existing lung condition from his smoking; 2) Tim Schudel, "on a more medical probable basis, had an aggravation of his pre-existing lung condition by his toxic exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzene;" 3) Craig Thompson, "on a more medical probable basis, had an aggravation of his pre-existing smoking condition" and "a more probable permanent aggravation of his pre-existing lung condition by his toxic exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzene;" and 4) Daniel Glass, "on a more probable medical basis, had an aggravation of his pre-existing lung condition by his exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzene."

It appears to the court that this is an untimely attempt by Dr. Lantsberger to somehow rehabilitate or change her "whole person aggravation" theory of causation which was found deficient by both Judge Van Sickle and the Ninth Circuit. Dr. Lantsberger's declaration seems to suggest she did not know, and plaintiffs' counsel did not advise her before or during trial that the standard used to evaluate workers' compensation claims is insufficient in a civil lawsuit to recover for personal injuries. Frankly, the court considers this preposterous. And in any event, a scientist's primary concern should be with the science, not the legal standards involved.

Dr. Lantsberger attempts, to no avail, to dress up her "aggravation" theory in a different clothing: a civil litigation standard instead of a workers' compensation standard;

aggravation of a specific condition instead of aggravation of the whole person. The simple fact remains that both Judge Van Sickle and the Ninth Circuit rejected Dr. Lantsberger's "aggravation" theory in all of its permutations. In their appellate brief to the circuit, plaintiffs presented arguments concerning Washington state law on aggravation of pre-existing condition. (Appendix 4 to Defendant's Response at pp. 41-42). Plaintiffs also specifically cited the pattern jury instructions appended to Dr. Lantsberger's declaration. (Id. at p. 43, n. 87).

Because Dr. Lantsberger's "aggravation" theory is scientifically unreliable, there is no need for discussion about the relevancy of her "aggravation" opinions. However, this court cannot ignore the fact that what Dr. Latsberger now says without hesitation in her declaration, that exposure more probably than not aggravated the pulmonary condition of each of the plaintiffs, is quite different from what Judge Van Sickle found based on his examination of her deposition and trial testimony.

Judge Van Sickle noted in his "Order Re Post-Trial Motions" that Dr. Lantsberger had seen Daniel Glass on three occasions (October 1090; May 1990; and September 1991) and that Glass had not reported respiratory problems on those occasions, nor had Dr. Lantsberger diagnosed pulmonary injury or disability. As such, Lantsberger diagnosed pulmonary injury or disability. As such, Judge Van Sickle concluded a reasonable jury could not have found for Glass on the respiratory injury component of his claim. Order at p. 29).[31] In her declaration, Dr. Lantsberger does not satisfactorily explain either how Judge Van Sickle's conclusion is in error or what enables her to now say, based on evidence available to her at the time of trial, that "on a more probable medical basis, Glass had an aggravation of his pre-existing lung condition by his exposure to Hydrochloric

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[31] Judge Van Sickle's conclusion was based on his analysis of Dr. Lantsberger's deposition and trial testimony found at pp. 7-11 of the "Order Re Post-Trial Motions."

Acid, Sodium Hydroxide and Trimethylbenzene."

Judge Van Sickle observed that with regard to Glass' heart palpitations, Dr. Lantsberger could only say they may have been related to his industrial exposure. This was clearly insufficient under the "more probable than not" standard of causation established by Washington case law, specifically O'Donoghue v. Riggs, 73 Wn. 2d 814, 440 P.2d 823, 830 (168) (Order at p. 29). In an attempt to bridge the causal gap, Dr. Lantsberger suggested Glass' "whole person" had been "aggravated." Judge Van Sickle found this "fall-back theory" did not constitute scientific knowledge and concluded that if none of Glass' specific symptoms could be linked to the clean-up (heart palpitations, memory loss, headaches, etc.) , it was simply impossible that his whole person could have been aggravated."[32] Judge Van Sickle found Dr. Lantsberger's "whole 'person aggravation" theory amounted to mere subjective belief and unsupported speculation. (Order at p. 30).

With regard to David Schudel, Judge Van Sickle concluded that "although Dr. Lantsberger suggested that Schudel's exposure to chemicals caused actual pulmonary injury, she could only say that his 'lung condition' was '**related to his exposures.**'" (Emphasis added). That did not suffice under the O'Donoghue "more probable than not" standard. (Order at pp. 30-31).[33] Here again, Dr. Lantsberger does not satisfactorily explain in her declaration how Judge Van Sickle's conclusion is in error or what enables her to now say, based on evidence available to her at the time of trial, that "on a more medical probable basis," David Schudel had an aggravation of his pre-existing lung condition

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32 Certainly, a particular condition (as opposed to a "whole person") can be "aggravated" by a toxic exposure. However, it must still be proven, under Washington law, that it is "more probable than not" the exposure was the cause of the aggravation.

33 Judge Van Sickle's conclusion was based on his analysis of Dr. Lantsberger's deposition and trial testimony found at pp. 11-15 of his "Order Re Post-Trial Motions."

from his smoking.

With regard to Craig Thompson, Judge Van Sickle concluded that "Dr. Lantsberger failed to link any of Mr. Thompson's specific complaints to the Kaiser project on a more-probable-than not basis." (Order at p. 32).[34] Lantsberger says nothing about this in her declaration, leaving this court in no position to take issue with Judge Van Sickle's analysis.

With regard to Tim Schudel, Judge Van Sickle noted as follows:

Dr. Lantsberger acknowledged that Mr. Schudel 'needed to have a pulmonary work-up by a pulmonologist," but that she 'never did get him in to see one.' Notwithstanding the absence of expert pulmonological evidence, Lantsberger suggested that Schudel developed respiratory problems as a result of his exposure to 'chemicals.' In that regard, however, she could say only that he told her that he had not had problems before Kaiser and that he did have problems after

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[34] Judge Van Sickle reached this conclusion based on an analysis of Dr. Lantsberger's deposition and trial testimony. This analysis is found a pp. 15-19 of the "Order Re Post-Trial Motions." Judge Van Sickle noted the following: 1) Dr. Lantssberger testified that Thompson indicated he had an increase in respiratory symptoms since his exposure, leading her to conclude the exposure "aggravated" his lung condition; 2) Dr. Lantsberger testified that a 1989 physical examination revealed "crackles in the bases of [Thompson's] lungs." Chest x-ray and pulmonary function tests were normal, although a methacholine challenge test was positive; 3) In June 1990, Dr. Lantsberger diagnosed an upper respiratory infection in Thompson. Asked whether the infection was probably related to his industrial exposure, Dr. Lantsberger replied that "[a]s a direct, single affect [sic], causal relationship, no;" 4) In January 1991, Thompson saw Lantsberger again for a respiratory infection. Lantsberger testified that the infection had a **possible** relationship to Thompson's work at Kaiser; 5) Thompson experienced no respiratory problems from February 1991 to September 1992. Lantsberger testified that an examination in September 1992 revealed crackles in Thompson's lungs which Lantsberger conceded were consistent with his significant smoking.

Kaiser.

(Order at p. 32). Judge Van Sickle concluded that while this might be sufficient to establish a temporal link between Schudel's work and his symptoms, it did not suffice to establish a casual link. (Id.) Dr. Lantsberger disputes none of this in her declaration and therefore, provides no conceivable basis upon which this court can or should take issue with Judge Van Sickle's analysis.

Declarations of Dr. Kaye H. Kilburn and Dr. Geoffre A. Kelafant

Drs. Kilburn and Kelafant were not on plaintiffs' witness list for the trial which commenced in April 1994. (Ct. Rec. 327). They did not testify at the trial. As such, defendants assert Kilburn and Kelafant have nothing to say which could possibly constitute admissible causation evidence, available to plaintiffs at the time of trial, which would have been sufficient to withstand a directed verdict. Defendants have filed motions seeking to strike the declarations of Kilburn and Kelafant on that basis. (Ct. Rec. 757 and 758).[35]

In any event, the declaration of Dr. Kilburn, like the declarations of Dr. Morton and Dr. Goldstein, amounts to nothing more than an attack on the Ninth Circuit" opinion.[36] Dr. Kilburn indicates he agrees with Dr. Morton's extrapolation method which the Ninth Circuit declared unreliable. (Kilburn Declaration at Paragraphs 7 and 19). Dr. Kilburn indicates he agrees with Dr. Goldstein's neurological causation testimony which the Ninth Circuit likewise found unreliable. (Kilburn Declaration at Paragraphs 10 and 19). Dr. Kilburn also indicates he agrees with Dr. Lantsberger's work and conclusions which the circuit found, in large part, unreliable and irrelevant. (Kilburn Declaration at Paragraph

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[35] Defendants also point out that the Kelafant declaration was filed on January 5, 1999, well past the December 21, 1998 deadline provided for plaintiffs to file a written response to the order to show cause. Prior to the deadline, plaintiffs did not seek an extension of time to serve and file the Kelafant declaration.

[36] For example, see Paragraph 9 of the Kilburn declaration.

19).

Dr. Kilburn offers opinions based on testing of Carlson and the Schudel plaintiffs which he conducted just a few weeks ago (December 19 and 20, **1998**). (Exs. F, G, H, I, J and K to Declaration of Kilburn). Obviously, that is not evidence which was available at the time of trial, even assuming it might otherwise be reliable and relevant under Daubert. Kilburn concluded his declaration by stating the testing and examinations he performed "confirmed that the **earlier** examinations, testing and opinions of the investigating and treating physicians was (sic) traditional and reproducible." (Kilburn Declaration at Paragraph 30) (Emphasis added). From this, it is clear that Kilburn is simply attempting to resuscitate theories already declared scientifically unreliable by the Ninth Circuit.

Dr. Kilburn says he believes the plaintiffs were probably exposed to polychlorinated dibenzofurans (PCDFs), produced from the polychlorinated biphenyls (PCBs) they were trying to clean up at the plant. He indicates PCDFs have "powerful neurotoxic effects." (Kilburn Declaration at Paragraphs 14, 15, and 16). Defendants assert this is the first time PCDFs have been mentioned in this case and cite portions of the record showing where plaintiffs stated they would not be pursuing any PCB-related claims. Certainly, there is nothing in Judge Van Sickle's "Order Re Post-Trial Motions" or the Ninth Circuit's opinion which discusses PCDFs. In the circuit's opinion discussing the neurological causation testimony which was offered at trial, the only chemicals mentioned are TCA and Perc.

Like Dr. Kilburn's declaration, Dr. Kelafant's declaration seeks merely to prove the Ninth Circuit is wrong. Specifically, Dr. Kelafant argues the circuit erred in finding unreliable the methodology used by Dr. Goldstein. (Kelafant Declaration at Paragraphs 8, 9, 10). Goldstein cited Kelafant's work in reaching the conclusion that short-term, moderate level TCA exposures experienced by the plaintiffs were responsible for their injuries. The circuit found the

Kelafant std did not support that proposition since it involved long-term repetitive exposures (7-15 years) to TC at high levels. Kelafant asserts the Ninth Circuit has misconstrued the conclusion that can reasonable be derived from his study. He claims: The article Toxic encephalopathy due to 1,1,1-Trichloroethane Exposure does not stand for the proposition that injury only occurs at a single high level exposure to TC or long term exposure at permissible exposure limits levels. In between the two ranges of exposures, the scientific literature and principles of extrapolation establish that injury does [occur] and scientists do not understand the exact biochemical mechanism. (Kelafant Declaration at Paragraph 17).

III. CONCLUSION

The affidavits and declarations submitted by plaintiffs in response to the court's show cause order are nothing more than an attack on the Ninth Circuit's opinion. The affidavits and declarations discuss theories and evidence which were before the circuit and which the circuit found scientifically unreliable or irrelevant to the causation inquiry. Even if this court was convinced of the validity of the plaintiffs' attack in an respect, it could not do anything about it.

The court is compelled to find plaintiffs have not satisfied the show cause inquiries. In light of the circuit's opinion, and for reasons set forth above, **IT IS ORDERED:**

1)The neurological injury component of plaintiff Williams' negligence claim is **DISMISSED** with prejudice;

2) The neurological injury component of plaintiff Carlson's negligence claim is **DISMISSED** with prejudice;

3) The negligence and/or loss of consortium claims of Daniel Glass, David Schudel, Tim Schudel, Sandra Schudel[37], And Craig Thompson (both respiratory and neurological components) are **DISMISSED** with prejudice in their entirety.[38]

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37 Her claim fails because it is dependent on the claim of her husband, Tim Schudel.

38 The fact the circuit did not direct dismissal of certain claims does not mean dismissal of those claims is inappropriate at this

This order effectuates a dismissal of plaintiff Carlson's negligence claim in its entirety (both neurological and respiratory components). Therefore, assuming Fed. R. Civ. 54 (b) certification is otherwise appropriate, the circuit would now have jurisdiction over an appeal from Carlson. The same appears to hold true for the Schudel plaintiffs whose claims have now been dismissed in their entirety.

Nonetheless, this court is hesitant about **sua sponte**

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juncture. The plaintiffs have been given an opportunity to show what **other** admissible evidence, available to them at trial, would have been sufficient to stave off directed verdict on those claims. They have failed to make that showing and hence, new trial on those claims in unwarranted. It is understandable why the circuit did not order dismissal.

Regarding Williams' negligence claim, the jury verdict did not distinguish between Williams' alleged neurological injury and her alleged respiratory injury. The circuit did not make any apparent ruling concerning the reliability or relevance of the scientific evidence related to Williams' respiratory injury. For the time being at least, defendants acknowledge a new trial on the respiratory injury claim is necessary. The fact the jury verdicts did not distinguish between neurological and respiratory injuries also necessitates retrial of the respiratory injury component of the claims of Kathrene Froese, John Hopkins and Ruth Hopkins.

The circuit ruled it did not have jurisdiction to hear Carlson's appeal. Obviously then, the circuit did not have jurisdiction to dismiss his negligence claim. However, for reasons already explained, this court views that as no barrier to dismissal of the neurological component of Carlson's negligence claim.

Finally, while the Ninth Circuit indicated the trial court erred in denying defendants a new trial on the claims of the Schudel plaintiffs, the circuit also made clear that the testimony of plaintiffs' only causation expert, Dr. Lantsberger, was erroneously admitted and "undoubtedly prejudicial." It is neither unreasonable or unexpected that the circuit would leave it up to the trial court on remand to determine if there was evidence available at the time of trial, other than Lantsberger's testimony, sufficient to withstand a directed verdict in favor of the defendants. The Schudel plaintiffs have been given an opportunity to show if they have any other such evidence so as to warrant a new trial on their claims. They have failed to make the necessary showing.

granting Rule 54(b) certification on these claims due to there being some question whether the circuit might eventually be required to address similar legal or factual issues arising from the claims still pending before this court. Morrison-Knudsen Co., Inc. v. Archer, 655 F. 2d 962, 965-66 (9th Cir. 1981) (claims disposed of by Rule 54 (b) judgment were inseverable, both legally and factually, from claims that remained unadjudicated in the district court and there were no unusual and compelling circumstances that dictated entry of an early, separate judgment on that part of the case). See also Texaco, Inc. v. Ponsoldt, 939 F. 2d 794, 797-98 (9th Cir. 1991). Presumably, an immediate appeal by Carlson and the Schudel plaintiffs would seek review of the dismissal of the respiratory injury component of their claims. That component of their claims appears similar to the respiratory injury component of the claims of Williams, Froese, and John and Ruth Hopkins which remain to be tried before this court.

At this time, the court will not certify final judgments as to Carlson and the Schudel plaintiffs. However, the court will also not foreclose them from making a motion for such certification, provided any motion is served and filed within thirty (30) days of the date of this order.

Defendant's motions to strike the declarations of Drs. Kilburn and Kelafant (Ct. Rec. 757 and 758) are **DISMISSED** for mootness.

IV. SCHEDULE . . . **[REDACTED]**

IT IS SO ORDERED. The Clerk is directed to enter this order and forward copies to counsel.

DATED this _____ of March, 1999.

/s/ALAN A. McDONALD

Senior United States District Judge

Filed In U.S. District Court Eastern District Of Washington
July 13 1994 James R. Larsen, Clerk Deputy

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON; TIMOTHY L. SCHUDEL and SANDRA SCHUDEL, husband and wife and the marital community composed thereof; KATHRENE FROESE; CRAIG A. THOMPSON; DEBORAH GUARANGA WILLIAMS; and JOHN HOPKINS and RUTH HOPKINS, husband and wife and the marital community, Plaintiff (s), vs. GENERAL ELECTRIC COMPANY, a foreign corporation; and KAISER ALUMINUM CORPORATION, a foreign corporation, Defendant (s).	JUDGMENT IN A CIVIL CASE CASE NUMBER: CS-92-0081

This action came on for trial before the Court and a jury, Honorable Fred Van Sickle, District Judge, presiding, and the issues having been duly tried and the jury having duly rendered its verdict.

IT IS ORDERED AND ADJUDGED that the plaintiff, Tim Schudel, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of One Million Fifty-One Thousand Two Hundred Seventy Dollars ($1,051,270.00), with interest thereon at the rate of 5.31% as provided by law, and his costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Sandra Schudel, recover of the defendants General Electric

Company and Kaiser Aluminum Corporation, the sum of Fifty Thousand Dollars ($50,000.00) on her claim for loss of consortium, with interest thereon at the rate of 5.31% as provided by law, and her costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, John Hopkins, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of One Million Three Hundred Forty-Eight Thousand Twenty Dollars ($1,348,020.00), with interest there on at the rate of 5.31% as provided by law, and his costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Ruth Hopkins, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of Six Hundred Two Thousand Two Hundred Fifty Dollars ($602,250.00) on her claim for loss of consortium, with interest thereon at the rate of 5.31% as provided by law, and her costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Ruth Hopkins, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of One Million Four Hundred Four Thousand Forty Dollars ($1,404,040.00) with interest thereon at the rate of 5.31% as provided by law, and her costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, John Hopkins, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of Six Hundred Two Thousand Two Hundred Fifty Dollars ($602,250.00) on his claim for loss of consortium, with interest thereon at the rate of 5.31% as provided by law, and his costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Merlin Carlson, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of Two Million Seven Hundred Seventy-Five Thousand Seven Hundred Sixty-Eight Dollars ($2,775,768.00), with interest thereon at the rate of 5.31% as provided by law, and his costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Daniel Glass, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of Nine Hundred Fifty-Six Thousand One Hundred Forty-Six Dollars ($956,146.00), with interest thereon at the rate of 5.31% as provided by law, and his costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Deborah Guaragna Williams, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of One Million Nine Hundred Seven Thousand Seven Hundred Eighty-Three Dollars ($1,907,783.00), with interest thereon at the rate of 5.31% as provided by law, and her costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, Kathrene Froese, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of One Million Four Hundred Fifty-Nine Thousand Three Hundred Thirty-Two Dollars ($1,459,332.00), with interest thereon at the rate of 5.31% as provided by law, and her costs of action;

IT IS ORDERED AND ADJUDGED that the plaintiff, David Schudel, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of One Million One Hundred Thirty Thousand Seven Hundred Eleven Dollars ($1,130,711.00), with interest thereon at the rate of 5.31% as provided by law, and his costs of action; and

IT IS ORDERED AND ADJUDGED that the plaintiff, Craig Thompson, recover of the defendants General Electric Company and Kaiser Aluminum Corporation, the sum of Five Hundred Fifty-Six Thousand One Hundred Ninety-Nine Dollars ($556,199.00), with interest thereon at the rate of 5.31% as provided by law, and his costs of action.

Dated: July 13, 1994 JAMES R. LARSEN, Clerk

by: /s/Charles L. Randazzo

Deputy Clerk

IN THE UNITED STATES DISTRICT COURT FORTHE EASTERN DISTRICT OF WASHINGTONAT SPOKANE

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON; TIMOTHY L. SCHUDEL and SANDRA SCHUDEL, husband and wife and the marital community composed thereof; KATHERENE FROESE; CRAIG A. THOMPSON; DEBORAH GUARAGNA WILLIAMS; and JOHN and RUTH HOPKINS, husband and wife and the marital community composed thereof,

Plaintiffs

v.

GENERAL ELECTRIC COMPANY, a foreign corporation; and KAISER ALUMINUM CORPORATION, a foreign corporation, Defendants.

NO 92-CS-0081-FVS

SPECIAL VERDICT FORM MERLIN CARLSON

We, the jury, make the following answers to the questions submitted by the court on the claim of Merlin Carlson:

QUESTION NO. 1: Were either of the defendants negligent? Answer "yes" or "no" after the name of each defendant.

Answer	Yes	No
Defendant General Electric Co.	X	
Defendant Kaiser Aluminum Corp.	X	

If you answer Question No. 1 "no" as to both defendants sign and return this verdict. If you answer Question No. 1 "yes" as to one or both of the defendants, then answer Question No. 2.

QUESTION NO. 2: Was such negligence a proximate cause of injury to Merlin Carlson?

Answer "yes" or "no" after the name of each defendant.

Answer	Yes
No	
Defendant General Electric Co.	X
Defendant Kaiser Aluminum Corp.	X

If you have answered "yes" to either defendant on Question No. 2, then answer Question No. 3. If you have answered "no" as to both defendants then sign and return this verdict.

QUESTION NO. 3: We the jury find for the plaintiff, Merlin Carlson, in the sum of $ 2,775,768.0.

If you answer Question No. 3 with any amount of money,answer Question No. 4. If you find no damages, sign and return this verdict.

QUESTION NO. 4: Was Merlin Carlson the loaned servant of General Electric Company?

Answer "yes" or "no". NO

Sign and return this verdict.

DATED this 13TH day of July, 1994.

s/Diana Waura
Presiding Juror

APPENDIX D

U.S. CONSTITUTION AMENDMENT VII CIVIL TRIALS

In Suits of common law, where the value and controversy shall exceed $20.00, right of trial by jury shall be preserved and no fact tried by a jury, shall be otherwise re-examined in any Court of the United States, than according to the rules of the common law.

FEDERAL RULES OF CIVIL PROCEDURE Rule 49. Special Verdicts and Interrogatories

(a) Special Verdicts. The court may require a jury to return only a special verdict in the form of a special written finding upon each issue of fact. In that event the court may submit to the jury written questions susceptible of categorical or other brief answer or may submit written forms of the several special findings which might properly be made under the pleadings and evidence; or it may use such other method of submitting the issues and requiring the written findings thereon as it deems most appropriate. The court shall give to the jury such explanation and instruction concerning the matter thus submitted as may be necessary to enable the jury to make its findings upon each issue. If in so doing the court omits any issue of fact raised by the pleadings or by the evidence, each party waives the right to a trial by jury of the issue so omitted unless before the jury retires the party demands its submission to the jury. As to an issue omitted without such demand the court may make a finding; or, if it fails to do so, it shall be deemed to have made a finding in accord with the judgment on the special verdict.

(As amended Jan. 21, 1963, eff. July 1, 1963; Mar. 2, 1987, eff. Aug. 1, 1987.)

Rule 50. Judgment as a Matter of Law in Actions Tried by Jury; Alternative Motion for New Trial; Conditional Rulings (1991 Amendment Version)

(a) Judgment as a Matter of Law.

(1) If during a trial by jury a party has been fully heard on an issue and there is no legally sufficient evidentiary basis for a reasonable jury to find for that party on that issue, the court may determine the issue against that party and may grant a motion for judgment as a matter of law against that party with respect to a claim or defense that cannot under the controlling law be maintained or defeated without a favorable finding on that issue.

(2) Motions for judgment as a matter of law may be made at any time before submission of the case to the jury. Such a motion shall specify the judgment sought and the law and the facts on which the moving party is entitled to the judgment.

(b) Renewal of Motion for Judgment After Trial; Alternative Motion for New Trial. Whenever a motion for judgment as a matter of law made at the close of all the evidence is denied or for any reason is not granted, the court is deemed to have submitted the action to the jury subject to a later determination of the legal questions raised by the motion. Such a motion may be renewed by service and filing not later than 10 days after entry of judgment. A motion for a new trial under Rule 59 may be joined with a renewal of the motion for judgment as a matter of law, or a new trial may be requested in the alternative. If a verdict was returned, the court may, in disposing of the renewed motion, allow the judgment to stand or may reopen the judgment and either order a new trial or direct the entry of judgment as a matter of law. If no verdict was returned, the court may, in disposing of the renewed motion, direct the entry of judgment as a matter of law or may order a new trial.(As amended Jan. 21, 1963, eff. July 1, 1963; Mar. 2, 1987, eff. Aug.1, 1987; Apr. 30, 1991, eff. Dec. 1, 1991; Apr. 22, 1993, eff. Dec. 1, 1993.)

28 U.S.C. § 2072. Rules of procedure and evidence; power to proscribe

(a) The Supreme Court shall have the power to prescribe general rules of practice and procedure and rules of evidence for bases in the United States district courts (including proceedings before magistrates thereof) and courts of appeals.

(b) Such rules shall not abridge, enlarge or modify any substantive right. All laws in conflict with such rules shall be of no further force or effect after such rules have taken effect.

(c) Such rules may define when a ruling of a district court is final for the purposes of appeal under section 1291 of this title.

(Added Pub.L. 100-702, Title IV, § 401(a), Nov. 19, 1988, 102 Stat. 46-48, and amended Pub.L. 101-650, Title III, § 315, Dec. 1, 1990, 104 Stat. 5115.)

U.S. CONSTITUTION AMENDMENT V

[V.]

Capital crimes; double jeopardy; self-incrimination; due process; just compensation for property

No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, of property without due process of law; nor shall private property be taken for public use, without just compensation.

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The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTONAT SPOKANE

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON; TIMOTHY SCHUDEL and SANDRA SCHUDEL, husband and wife, and the marital community composed thereof; KATHRENE RAE HOWELL; CRAIG A. THOMPSON; DEBORAH GUARAGNA; and JOHN and RUTH HOPKINS, husband and wife, and the marital community composed thereof, Plaintiffs, v.	NO. CS-92-0081-FVS PLAINTIFFS' MEMORANDUM ON POTENTIAL INSTRUCTIONAL ERROR BY ATTEMPTING TO DEFINE AREA OF INJURY

GENERAL ELECTRIC)
COMPANY, a foreign)
corporation; and KAISER)
ALUMINUM)
CORPORATION, a foreign)
corporation,)
Defendants.)

PLAINTIFFS' POSITION

It is Plaintiffs' position it would be error to instruct on the individual injury contentions of the Plaintiffs. Further, it is Plaintiffs position it would be error to require specific findings of fact on the area of individual injury for individual Plaintiffs.

LAW

Throughout this litigation the Defendants have attempted to blur the law as it relates to admissibility of evidence and the burden of proof. It is anticipated the Defendants will likewise attempt to blur the distinction between admissibility of evidence with the establishment of a prima facie case sufficient to support an instruction as to the elements of damage.

The basic issue is whether Plaintiffs have prima facie evidence of injury to the body/mind of each Plaintiff. Plaintiffs have introduced evidence of such injury. (See appendix A to this memorandum.) Defendants' usual response is to say the evidence is insufficient to let the issue go to the jury. Plaintiffs have previously addressed to the Court that challenges to such evidence goes to weight and not admissibility.

For example, a jury can weigh the credentials of Dr. Lantsberger against those of Dr. Bruya as to pulmonary injuries. Plaintiffs are entitled to have the individual place whatever weight he or she chooses on the education, knowledge, experience and skill of these witnesses. An individual juror may choose to place all the weight on the credentials of a witness; while another juror may choose to place equal weight on credentials and sources of information

considered. Under the law, either method of weighing the evidence is acceptable. All the law requires the jurors to do is to discuss and consider all evidence before reaching a decision. See Court's Proposed Instruction nos. 35 and 33.

Under Court's Instruction nos. 33 and 35 one juror may individually determine one Plaintiff has emotional suffering from exclusively a psychological stand point. Another juror may individually determine the same Plaintiff has emotional suffering due to a psychological reaction to a physical problem. After discussion and consideration, all the law requires the jury to do is to agree on whether that Plaintiff was injured by the exposure to toxic chemicals at the 1988 PCB cleanup. A jury is not required to agree that the injury occurred in a certain manner or that the injury was all psychological or a combination of psychological/physical factors.

A similar analysis could be performed on the question of memory loss. Some of the jurors may believe a Plaintiff's memory loss is due to a brain injury. Other jurors may believe the memory loss is due to depression over being physically limited by pain and respiratory problems. All the jurors have to agree on is that the Plaintiff was injured. The jurors are not required to agree as to the injury being solely psychological, physical or both.

Individual injury contentions should not be listed in the instructions or in the special verdict form. A listing of the health contentions would mislead the jury as to its function and responsibilities under the law. cf State v. Hayes, 73 Wn.2d 568, 572, 439 P.2d 978 (1968). The jury's responsibility is to find duty, breach and damages. "The test in this situation is not a matter of semantics, but whether the jury was mislead as to its function and responsibilities under the law." Id., 572. Plaintiffs' Proposed instructions nos. 49, 50, 51 are correct statements of the law.[1] Under the law, it is

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[11]Plaintiffs understand that these instructions need to be modified to reflect, which Plaintiffs are recovering for which elements of damages. For example Craig Thompson does not have a claim for earning capacity loss.

the jury's responsibility to determine whether Plaintiffs have proven that each individual Plaintiff was injured. It is not the jury's responsibility to make a factual finding as to whether the injuries were psychological or physiological. Likewise it is not the jury's responsibility to determine whether a memory loss is from brain injury or depression. It is the jury's responsibility to determine whether a Plaintiff's memory loss, pulmonary complaints, depression, etc., was probably caused by the negligent exposure to chemicals in 1988 during the PCB clean-up.

Respectfully submitted this 26th day of June, 1994.

DAWSON & MEADE

s/_____

Marcia M. Meade, WSBA #11122

Attorney for Plaintiff Carlson

SCHAUERMANN & THAYER

s/_____

Craig F. Schauermann, WSBA #7396

Attorney for Plaintiffs Schudel,

Glass, Howell, Thompson and Guaragna

THOMAS C. PHELAN

s/_____

Thomas C. Phelan, WSBA #11373

Attorney for Plaintiffs Hopkins

INSTRUCTION NO. 29

It is a duty of the Court to instruct you as to the measure of damages in regard to the following plaintiffs:

Merlin Carlson,
Daniel Glass,
Deborah Guaragna Williams
Kathrene Froese, and
David Schudel.

By instructing you on damages, the court does not mean to suggest for which party your verdict should be rendered.

If your verdict is for a particular plaintiff, then you must determine the amount of money which will reasonably and fairly compensate that plaintiff for such damages as you find were proximately caused by the fault of defendants.

As to the plaintiffs Merlin Carlson, Daniel Glass, Deborah Guaragna Williams, Kathrene Froese, and David Schudel, you should consider all of the following past economic damages elements:

1. The reasonable value of necessary medical care, treatment and services received to the present time;

2. The reasonable value of earnings, salaries and earning opportunities lost to the present time; and

3. The reasonable value of necessary household services, other than medical, required to the present time.

In addition, you should consider the following future economic damages elements:

1. The reasonable value of necessary medical care,treatment, and services which with reasonable probability will be required in the future;

2. The reasonable value of earning capacity and employment opportunities which with reasonable probability will be lost in the future; and

3. The reasonable value of necessary household services and expenses which with reasonable probability will be required in the future.

In addition, you should consider the following

non-economic damages elements:

1. The nature and extent of the injuries;

2. The disability and loss of enjoyment of life experienced and which with reasonable probability will be experienced in the future; and

3. The mental, physical, and emotional pain and suffering experienced, and which with reasonable probability, will be experienced in the future.

The burden of proving damages rests with the party claiming them, and it is for you to determine whether any particular element has been proved by a preponderance of the evidence.

The law has not furnished us with any fixed standards by which to measure pain, suffering, loss of enjoyment of life, or disability. With reference to these matters, you must be governed by your own judgment, by the evidence in the case, and by these instructions.

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FILED IN THE
U.S. DISTRICT COURT
EASTERN DISTRICT OF
WASHINGTON **DEC 28 1994**
JAMES R. LARSEN, CLERK
_____DEPUTY

The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON AT SPOKANE

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON; TIMOTHY SCHUDEL and SANDRA SCHUDEL, husband and wife, and the marital community composed thereof; KATHRENE RAE HOWELL; CRAIG A. THOMPSON; DEBORAH GUARAGNA; and JOHN and RUTH HOPKINS, husband and wife, and the marital community composed thereof,	)	NO. CS-92-0081-FVS
Plaintiffs,	)	AFFIDAVIT OF MARCIA M. MEADE IN RESPONSE TO DEFENDANTS' OPPOSITION TO THE FRCP 54(b) LANGUAGE
v.	)	

GENERAL ELECTRIC COMPANY, a foreign corporation; and KAISER ALUMINUM CORPORATION, a foreign corporation,
Defendants.

STATE OF WASHINGTON)
):ss
County of Spokane)

Marcia M. Meade, being first duly sworn on oath, deposes and says:

1. I am counsel of record. The following documents are pertinent to Defendants' opposition to the Court finding this to be a final decision as to all of the Plaintiffs under FRCP 54(b).

2. On February 28, 1994, the Court ordered Plaintiffs "it is hereby ordered: 1. By March 7, 1994, the Plaintiffs shall do the following: (a) list each claim against the Defendants, including all theories of liability or causation;. . .(emphasis added).

3. In complying with that Order, the Plaintiffs filed with the Court a 19 page pleading entitled "Plaintiffs' List of Claims, Theories of Liability, and Identity of Experts Who Will Be Called" on March 7, 1994. This pleading also listed Plaintiffs' theories of causation.

4. The above document listed that the Plaintiffs were making a claim as to negligence. There were approximately 12 different theories of the claim of negligence. Thereafter, for ten pages the Plaintiffs identified their theories of proximate cause.

5. The Plaintiffs also identified that they filed extensive offers of proof as to the witnesses, who would be testifying on the issues of causation as it related to the Plaintiff-Workers.

6. At the time of jury instructions, the Court asked the Plaintiffs to provide it with a list of what each Plaintiff was contending their damages to be.

7. The Plaintiffs did provide to the Court responses to each. See attached Exhibits A, B, and C. Plaintiffs counsel also identified in memorandum their exception and authorities as to it being error to instruct on individual factual components of damages.

8. At all times Plaintiffs have identified their negligence claim as they understood Washington's CR 8(a) and FRCP 8(a) have denominated a claim to be.

9. Affiant has always understood the law to be that damages are an element of a claim. Further that a damage element, alone, does not constitute a claim.

s/_____
Marcia M. Meade

SUBSCRIBED AND SWORN to before me this 28 day of December, 1994.

s/ Lisa Keller_____
NOTARY PUBLIC in and for the State
of Washington residing in Spokane.
Commission Expires: 6/28/98.

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The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON AT SPOKANE

DAVID SCHUDEL, et al., Plaintiffs' vs. GENERAL ELECTRIC COMPANYand KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	NO. CS-92-0081-FVS PLAINTIFFS CONTENTIONS ON MERLIN CARLSON

COMES NOW the Plaintiffs and identify for the Court the contentions as to Merlin Carlson. It is contended that Merlin Carlson had an injury to his mind and his body at the time of the exposure. Including the present experience of alternations in consciousness, rash, breathing difficulties, coughing, headaches, nausea, vomiting. The injury to his mind and body include the development of solvent syndrome,

toxic encephalopathy, memory loss, concentration difficulties, irritability, mood swings, depression, injury to his lungs, injury to his personality and injuries to all of his organ systems which manifested as solvent syndrome, aggravation of his existent level of cognitive functioning, aggravation of his lung function, permanent respiratory problems, loss of his ability to live independently, loss of his ability to become medicine man, loss of his ability and capacity to enjoy life, loss of his ability and capacity to work, mental and physical pain and suffering.

DATED this 24 day of June, 1994.

DAWSON & MEADE

s/_____

Marcia M. Meade, WSBA #11122

Attorney for Plaintiff Carlson

Organic Solvent Encephalopathy: An Old Hazard Revisited

Peter Houck, M.D., Diane Nebel, BA, and Samuel Milham, Jr., M.D., MPH

This report describes neurologic and respiratory symptoms among 26 engineers and contract laborers who used organic solvents and detergents to remove polycholorinated biphenyl contamination from a poorly ventilated factory basement. Neurologic symptoms included persistent central nervous system deficits; these developed in on worker after only 3 days. Respiratory symptoms included cough that persisted for more than 2 years. Laborers were more likely to report symptoms than were engineers. Appropriate ventilation or respirator use might have prevented the workers' morbidity. This incident serves as a reminder that organic solvent-related occupational illness continues to occur despite worker-health regulations and knowledge of preventive measures.
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Key words: occupational illness, enclosed space, dibenzofurans, reactive airway dysfunction, solvent exposures.

Division of Field Epidemiology, Epidemiology Program Office, Centers for Disease Control, Atlanta, GA (P.H.).

Environmental Health Office, Spokane County Health District, Spokane, WA (D.N.). Washington State Department of Health, Olympia (S.M.). Address reprint requests to Dr. Peter Houck, Indian Health Service, 2201 Sixth Avenue, Room 300, Seattle, WA 98121. This work was performed at the Washington State Department of Health, Olympia, Washington. It was presented in part at the 1990 Epidemic Intelligence Service Conference, Centers for Disease Control, Atlanta, April, 1990. Accepted for publication December 3, 1991. © 1992 Wiley-Liss, Inc.

INTRODUCTION

Protecting workers against the effects of organic solvent exposure has been an occupational health priority because these compounds can cause neurologic damage [Morrow et al., 1990] and death [Browning, 1965]. Neurologic and respiratory symptoms developed among workers who used organic solvents and detergents in 1988 to remove polychlorinated bephenyl (PCB) contamination from a poorly ventilated basement. Protective measures were inadequate and not used consistently. We describe this incident as a reminder that easily preventable solvent-related occupational illness continues to occur in site of occupational health regulations and knowledge of protective measures.

BACKGROUND

In October 1988, a large multinational engineering corporation contacted to remove PCB contamination from part of a factory in Washington State. It provided a supervisory engineer and unionized engineers to work with unskilled, non-union laborers hired from another company. The supervisory engineer became ill 2 days after work began on October 15, was hospitalized, and did not return to the job. A series of engineers then directed the project.

The worksite consisted of five basement rooms with approximate volumes ranging from 187 to 210 m^3 that had been contaminated with PCBs from ruptured electrical capacitors. "Ventilation" was provided during the cleanup project by removing portions of the basement's ceiling; a nonvented fan was used intermittently to circulate air within the basement. Charcoal cartridge respirators were issued to the workers, although some reported receiving only paper dust masks.

Two organic solvent mixtures were used. One mixture contained alkylated benzenes (45%) and monoethanolamine (6%), and was applied as a foam. The other contained 1,1,1-trichloroethane (72%) and perchloroethylene (24%), and was applied as a spray. The vapors of both solvents are five times heavier than air, and will settle and accumulate in low-lying

areas such as basements. Material safety data sheets (MSDS) provided with these products warned clearly that neurologic injury could occur unless adequate ventilation or respirators were used, especially in low-lying areas. The two detergents used were applied as foam. Once contained sodium hydroxide; its MSDS recommended use of respirators if it was sprayed in enclosed areas.

On December 15, the day the PCB cleanup project ended, the supervisory engineer's illness was diagnosed serologiclly as legionellosis and was reported to the local health department and to the Washington State Department of Health Communicable Disease Epidemiology Office. This investigation was then undertaken because respiratory symptoms in other workers suggested a possible legionellosis outbreak.

SUBJECTS AND METHODS

Study Population

All 27 workers who were employed on the project were included in the investigation, although symptom and exposure data from the supervisory engineer are not included in this report because he worked for only 2 days before becoming ill. Of the other 26 workers, 14 (54%) were engineers and 12 (46%) were laborers; 21 (81%) were male. Their ages ranged from 20 to 61 years (median 43 years among engineers, 28 years among laborers). None of the laborers had previous experience with chemical cleanup, compared with 11 (79%) of the engineers. Project employment ranged from 3 to 58 days (median 24 days among engineers and 18 days among laborers).

Workers were questioned about symptoms and chemical exposure in person or by telephone between December 16, 1988, and February 28m 1989 and again in May 1989; later follow-up was through attending physicians. Factory officials provided data o their employee absenteeism.

Definitions

For this investigation, "persistent cough" was defined as self-reported cough that developed during the project and continued for more than 30 days after completion of work. "Memory change" was defined as self-reported memory impairment with onset during the project.

TABLE I. Prevalence of Symptoms in Laborers and Engineers, PCB Cleanup, Washington State, 1988

	Laborers (n = 12)		Engineers (n = 14)		Total (n = 26)	
Symptom	No.	%	No.	%	No.	%
Acute confusion	10	83	02	14	12	46
Headache	09	75	01	07	10	39
Memory change	04	33	01	07	05	19
Cough	12	100	07	50	19	73
Wheezing	08	67	02	14	10	39
Persistent cough	07	58	02	14	09	35

Laboratory Investigation

Sputa and sera were collected between December 17, 1988 and January 10, 1989 from a convenience sample of accessible symptomatic workers that exuded the original supervisory engineer. Microbiologic and serologic tests were done at the Washington State Public Health Laboratory. Sputa from 8 of the 19 workers with cough were tested for Legionellae by culture and direct fluorescent antibody staining. Unpaired sera from four of the workers with cough were tested for antibodies against Legionellae species, and from six workers with cough for antibodies against influenza virus, adenovirus, respiratory syncytial virus, and mycoplasma.

Sera from five of the workers with cough were tested for PCBs at the Washington State Pesticide Laboratory using gas-liquid chromatography with a detection threshold of 10 parts per billion (ppb). Sera from 12 workers (12 with cough, 10 with other symptoms) were tested for polychlorinated dizbenzo-p-dioxins (PCDD) and polychlorinated

dibenzofurans (PCDF) at the Centers of Disease Control, Atlanta, using sequential gas chromatology/mass spectometry with a detection threshold of < 50 parts per trillion (ppt) [Patterson et al., 1987].

Four of the nine workers with persistent cough consulted an occupational medicine physician and were evaluated with mathacholine challenge tests. All five who reported memory change were evaluated by psychologists using batteries of quantitative neuropshychologic tests.

RESULTS

Clinical Findings

The frequencies of reported symptoms were: cough, 19 (73%); acute confusion while working, 12 (46%); wheezing, 10 (39%); headache, 10 (39%); persistent cough, 9 (35%); and memory change, 5 (19%). Laborers were more likely than engineers to report each of these symptoms (Table I).

The duration of "persistent" cough ranged from 31 days to 30 months (median 64 days) after job completion. One laborer was hospitalized with cough and dyspnea; all nine workers with persistent cough were treated with steroids of bronchodilator drugs. There was no increase in respiratory illness among factory employees of project workers' family members.

Individual chemical exposures could not be quantified reliably, because we did not learn of this incident until after completion of the project and also because detailed records of chemical use had not been kept. However, purchase records indicated that 55 gallons of organic solvent concentrated were used on the project; engineers estimated that 2-3 gallons were used in each shift when solvents were utilized. Solvents were not used simultaneously by all workers of in all parts of the worksite. Al least 50 gallons of detergent concentrate were used. Anecdotal reports from laborers indicated that the engineers spent less time in the basement using the cleaning agents than did the laborers.

Anecdotal complaints from both engineers and laborers indicate that work conditions were poor; ventilation was often

inadequate; respirator use was minimal, skin protection was ineffective, and cleaning agents were reported to be mixed together and used in higher-than-recommended concentrations. One engineer reported that respirator use was sporadic and should have been mandatory; he left the basement frequently because of dizziness.

Laboratory Findings

No evidence of respiratory pathogen infection was detected in the sputa of sera of tested workers. No PCB's were detected in the tested sera. All sera tested for PCDDs or PCDFs contained the compounds , but at concentrations similar to those reported in the general population [Patterson et al.. 1989]. Methacholine challenge tests were positive in three of four tested.

Neuropsychologic Test findings

Neuropsychologic test results were grossly abnormal in 2 of the 5 tested workers. The first, a 44-year-old laborer, developed headache, memory impairment, and acute confusion after 3 days of work, but did not lose consciousness. He used the solvent mixtures in an enclosed stairwell and denied receiving a charcoal cartridge respirator. His mental status had been clinically normal during a pre-employment physical examination performed 2 weeks before his solvent exposure, but was abnormal to the same examining physician after work on the project. The remainder of his neurologic evaluation, including computerized tomographic and magnetic resonance imaging scans of the head were normal. He had no history of neurologic illness, drug use, of previous organic solvent exposure. His condition is stable 3 years after exposure. He remains unable to hold his former job as a custodian and becomes list in his own neighborhood.

The second severely affected worker, a 24-year-old laborer, developed headaches, dizziness, and memory impairment after about 1 month of work, but never lost consciousness. His sister reported that his mental functioning changed in during the employment. He used all of the cleaning agent, but could not quantify his exposure. He

denied receiving a charcoal cartridge respirator. Neuropsychologic testing performed 20 moths after job completion revealed deficits in attention, concentration, and memory. Three years after exposure he is unable to live independently and becomes lost in his rural hometown.

DISCUSSION

The neurologic symptoms experienced by these workers are consistent with those associated with organic solvents [Sandmeyer, 1981; Torleson and Rowe, 1981; Linz et al., 1986; Dick, 1988; Kruse et al., 1982; Morrow et al., 1990]. Although memory loss has been reported in persons exposed to PCBs, PCDDs, and PCDFs, a causal association has not be established [Proctor et al., 1988; Reggiani and Bruppach, 1985]. Most reports of solvent-related encephalopathy describe long-term exposure or ver high short-term exposure with loss of consciousness. It is relatively short periods of exposure without loss of consciousness. Hypoxemia severe enough to cause permanent neurologic damage would result in unconsciousness [Adams and Victor, 1989]. Variable susceptibility to organic solvent neurotoxicity has not been demonstrated [Pelkonen, 1986].

Acute respiratory symptoms could have been caused by either of the organic solvent mixture [Sandmeyer, 1981; Deichman and Gerande, 1969; Torkleson and Rowe, 1981], sodium hydroxide in one of the detergents [Proctor et al., 1988], or the detergents themselves [Kreiss et al., 1982]. The persistent cough may represent reactive airway dysfunction syndrome, a non-immunologic asthma-like condition that can follow acute exposure to a variety of respiratory irritants {Brook et al., 1985]. Although acute [Smith et al., 1982] and chronic [Warshaw wt al., 1979; Shigematsu et al., 1977] coughs have been reported with PCB and PCDF exposure, other studies have found no unusual respiratory symptoms among occupationally exposed person with serum PCB levels as high as 340 ppb [Chase et al., 1982; Maroni et al.., 1981]. An infectious cause was not apparent; the supervisory engineer" legionellisis was probably acquired before the

project began.

Adequate ventilation or consistent use of respirators probably would have prevented the workers' morbidity; both measures were clearly recommended in the MSDSs provided with the cleaning agents. What led to the particularly poor safety practices employed on this project is uncertain, although frequent changes of he symptoms was probably higher than that of the engineers because of more intense chemical exposure. Whether the laborers' lack of union membership contributed to particular unhealthy working conditions cannot be determined. Nonunion contribution workers have been reported to be generally less experienced, as in this incident, and to have poorer safety training and performance than union workers [Dedobbeleer et al., 1990], but another study found the relationship between unionization and workplace safety and health to be inconsistent [Taylor, 1987].

It is not possible to estimate how common incidents such as this one in Washington State, because there is no occupational illness reporting system similar to the communicable disease surveillance system that identified this problem fortuitously Experience in other states suggests that mandated reporting of occupational illness can identify remediable health hazards, even though reporting ins incomplete [Centers for Disease Control, 1990].

CONCLUSIONS

The knowledge that organic solvents and other cleaning compounds can cause neurologic and respiratory problems is not new. However, the severe neurologic injuries suffered by workers in this incident are sobering reminders that easily preventable organic solvent-related occupational illness continues to occur in a highly developed country late in the twentieth century. Only the consistent application of recommended preventive measures will minimize the occurrence of incidents such as this.

ACKNOWLEDGMENTS

The author thank Paula Lantsberger, MD, for clinical

data; Joyce Campbell, Michael McDowell, and Karna Towne for the microbiologic and serologic studies; Harol Ruark for PCB analysis; Larry Needham, PhD, and Donald Patterson, PhD, for PCDD and PCDF analyses; and Renate Kimbrough, MD, for suggestions during preparation of this manuscript.

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The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON AT SPOKANE

DAVID SCHUDEL, et. al., Plaintiffs, v. GENERAL ELECTRIC COMPANY, a foreign corporation; and KAISER ALUMINUM CORPORATION, a foreign corporation, Defendants.	)))))))))	NO. 92-CS-0081-FVS OFFER OF PROOF BY DR. DANIEL GOLDSTEIN

STATE OF DENVER)
:ss
County of Denver)

Daniel Goldstein, being first duly sworn on oath, deposes and says:

1. I am a medical toxicologist. Attached as Exhibit A is a current copy of my curriculum vitae.

2. It is my understanding that the Defendants have challenged whether I am qualified to testify on the cause of Merlin Carlson's injuries from the 1988 exposure to chemicals at the PCB clean-up.

3. I have had my deposition taken over 3 days in connection with this litigation. In the first two depositions, I identified a significant amount of scientific literature as well as the med-line research I performed on the solvents. See Exhibit B for the computer print out. I also identified the medical treatises I had in my office for consulting on the medical issues involved in the evaluation. In the third

deposition, I again identified several binders filled with scientific articles on solvent exposure. See Exhibit C for the alphabetical according to author list of the above binders.

4. I also listed assorted text books that were available to me or available in my office including Hazardous Materials: Clinical Principles of Environment Health, ed. by John B. Sullivan, Williams and Wilkins, Baltimore (1992).

5. I also made reference to Dr. David Hartman's textbook, Neuropsychological Toxicology: Identification and Assessment of Human Neurotoxins, Pergamon Press, New York (1988).

6. Before my first deposition, Plaintiffs counsel attempted to provide Defense Counsel with a typed summary of my opinions. In the deposition I corrected where counsel had been in error in conveying my opinions. Exhibit D is a copy of that typed summary. In part the summary addresses some of the basics of the scientific literature.

7. In all three depositions neither Defense Counsel specifically asked what methodology I applied in arriving at my opinions. When given an opportunity to explain my opinions I attempted to do so.

8. I have an extensive background in toxicology, making me uniquely qualified to express opinions in this case. My background includes a Bachelor of Science in molecular biology. I have a Medical Degree from John Hopkins University. I have done a research and ___ fellowship in Clinical Pharmacology and toxicology. I have certification from the American Board of Pediatrics, American Board of Medical Toxicology and the American Board of Clinical Pharmacology. I have published in the areas of Pharmacology and Toxicology.

9. My practice includes Clinical Toxicology, Occupational and Environmental Toxicology, acute and chronic poisoning and Clinical Pharmacology. On a day-to-day basis I practice as a physician dealing with individuals that are exposed to neurotoxic substances including the chemicals present at the 1988 PCB cleanup at the Kaiser Mead plant.

10. Part of my practice involves advising employers on when and how they can provide protection to workers from toxic substances. I am familiar with many but not all government regulations as far as use of hazardous substances in work and in the environment. I am familiar with the scientific basis behind the regulations for protecting the worker and the environment.

11. I have reviewed extensive materials in connection with evaluating the injuries to Merlin Carlson and Dan Skeman. See as Exhibit B a list of materials that I have reviewed in connection with this.

12. Attached to this Offer of Proof as Exhibit E is a toxic exposure diagnostic strategy from Hazardous Materials Toxicology: Clinical Principles of Environmental Health, page 317. A brief study of the diagram will show that many different factors enter into evaluating whether a patient's problems are related to a toxic exposure.

13. I understand Defense Counsel have made broad statements as to the scientific basis of opinions about the etiology of Merlin Carlson's injury. For example I understand Defense Counsel has written:

> First, the literature validates only two scenarios from which an encephalopathy may result from exposure to certain solvents: (1) when an individual sustains chronic exposure to the solvent over a decade or more years; or (2) when an individual sustains a severe acute exposure to a very high level of solvent, and suffers an accompanying loss of consciousness.. . . Goldstein dep. tr. (9/2/93) at 129, 148-150 (agreeing that most reports of solvent-induced encephalopathy follow these two patterns); see generally Spencer and Schamberg, "Organic Solvant Neurotoxicity, " 11 Scand J. Work. Environ. Helath 53 (1995) (review of solvent neurotoxicity evidence).- See Defendants Memorandum of Points & Authorities in Support of Joint Motion In Limine On Encephalopathy Claims page 24.

Defense Counsel has taken my deposition testimony out of

context. Defense counsel has also identified some journal publications, which I shall address.

14. Attached as Exhibit F are pages 129-134 of the 9-2-93 Deposition. The answer in context does not stand for what Defense Counsel is asserting in their Brief.

15. Below I shall address in more detail the scientific literature as to the etiology of Merlin Carlson's injury.

16. I have seen that Defense Counsel is citing Drs. Spencer & Schumberg, "Organic Solvent Neurotoxicity: Facts and Research Needs, Scand. J. Work. Environ. Health, 11,supp.1:53-60 (1985) as authoritative on toxic encephalopathy. From a scientific standpoint such a conclusion is in part misleading. First, the article is directed towards what research is needed in connection with solvent exposures. Drs. Spencer & Schumberg were urging doctors to use a logical scientific method in reporting incidents of solvent induced encephalopathies. Second, the article is not a review of all the scientific literature available on solvent induced encephalopathies. Drs. Spencer & Schumberg recognized "This brief survey demonstrates that certain aliphatic and aromatic solvents are proved neurotoxicants in humans and animals. . . . Many other solvents and solvent mixtures are suspect human neurotoxicants and, remarkably, the majority of solvents in daily use has yet to be tested for chronic neurological effects in experimental animals." Id, 58-59. Drs. Spencer and Schumberg conclude their call for research with the following:

> The degree of reversibility depends principally on the type and extent of neurological damage: peripheral nerves generally regenerate, whereas lesions of the brain and special sense organs are more often associated with permanent deficits. Taken together, these principles should be useful to identify other solvents with neurotoxic potential so the future human exposure to harmful concentrations may be prevented." Id, 59.

17. Drs. Spencer & Schumberg call for more research was published in 1985. There has been considerable scientific

research published as to solvent exposure and neurotoxic injuries over the last 9 years.

18. In an every day medical practice a competent physician does not await for a scientific article to be published regarding the patient's present condition to be published before he or she determines the probable etiology of a patients condition. Rather, a physician uses a patient's history, physical examination, tests and what-ever scientific literature might be available to arrive at a diagnosis of patient and determine etiology. With neurotoxic insults this methodology is supported by the scientific authors relied upon by Defense Counsel. Drs. Schaumburg and Spencer have an article entitled "Recognizing neurotoxic disease" Neurology Vol. 37: 276-278 (1987). These doctors note:

> **The investigation of suspected neurotoxic disease.** A focused history is the cornerstone of the neurotoxicology clinical evaluation. The history alone often establishes or strongly suggests a diagnosis of toxic disease.

The history available on Merlin Carlson and the workers at the 1988 PCB clean-up is consistent with a neurotoxic insult.

19. Drs. Schaumburg and Spencer also point out other factors in recognizing neurotoxic disease. Those factors include: 1) Neurotoxic chemicals associated with nervous system degeneration rarely destroy focal areas of the CNS or PNS. i.e. the damage is more global; 2) Exposure to different levels of the same substance may result in a dramatically different clinical picture; 3) Neurotoxic illness usually occurs concurrent with exposure or following a short latency; 4) An agent without known neurotoxic activity may enhance the toxicity of a known neurotoxin that is present at a "no-effect" level; and 5) "Asymptotic toxic disease of the nervous system occurs and, under certain circumstances, may be widespread. Unless a consistent, high-level intellectual activity, a modest decline in performance may go unnoticed. An analogous phenomenon has been described in workers with subclinical toxic neuropathies who deny an disability despite sensory dysfunction obvious to their spouses."

20. I have utilized a recognized scientific processes in analyzing the information provided to me. A systematic approach in evaluating toxic causation would include:

a. Defining the exposure;
b. Evaluating the exposure dose response relationship;
c. Evaluating the temporal relationship;
d. Evaluating latency periods;
e. Evaluating known association of disease by chemical;
f. Evaluation of the pathophysiology; and
g. Considering confounding factors and risk modification factors.

21. Many of the medical treatise on toxicology have sections devoted to the scientific analysis of exposure to toxic substances. For example the above method for analyzing the etiology of a potential toxic exposure is one scientific recognized method. See Hazardous Materials Toxicology: Clinical Principles of Environmental Health.

22. In routine toxicologist practice, patients are frequently referred to neuropsycholgist for evaluation. It is part of a toxicologist's methodology in working up a patient to refer to a neuropsychologist for testing. The toxicologist and neuropsychologist and perhaps other health care professionals collaborate in diagnosing a patient's condition.

23. In deposition I identified Dr. Larry W. Welch's "Chronic neuropsychological and neurological impairment following acute exposure to a solvent mixture to toluene and methyl ethyl ketone (MEK)", Clinical Toxicology, 29(4): 435-445 (1991). See Exhibit G. A worker was exposed to solvents in an unventilated room on only two separate occasions. He had with exposure he had symptoms of dizziness and headaches, but did not lose consciousness. He began to note concentration and memory difficulties. His wife provided history that the worker lost the ability to carry out daily activities containing sequential steps. He had continued complaints of headaches, respiratory distress, feeling "weak and tired", shortness of breath, appetite and sleep disturbances and loss of libido. From this history neuropsychological and

neurological test were performed. The testing documented impairment. After analyzing the history and testing it was determined that the worker had brain damage from an acute exposure to solvents.

24. I have attached Exhibit G, which is Dr. Welsh's paper is not only illustrative of "solvent" induced encephalopathy, but also of the methodology used by physicians in determining the etiology of a disease.

25. In reviewing the materials it is my understanding that the following cleaning products were used at the 1988 PCB cleanup: Capsur (R), HDD Heavy Duty Degreaser, alkaline cleaner (HDD), power cleaner, Seaport, CRC heavy duty cleaner,

26. I also was provided portions of deposition testimony, in which workers were describing how these chemicals were being used. The depositions also described the symptoms the workers were manifesting at the time of using these chemicals. Since my deposition I have also been provided the 16 page report of Dale Haskin's. A sopy of Dale Haskin's report will be attached as Exhibit H.

27. I have reviewed the Material Safety Data Sheets (MSDS) from the above chemical agent. There are several known neurotoxic agents present in the chemicals. They include, 1,1,1 trichloroethane, (methyl chloroform), perchloroethylene (tetrachloroethylene), aromatic hydrocarbon mixtures including naphthalene and 1,2,4 trimethylbenzene, ethylene glycol, monethanolamine.

28. I have reviewed the Offers of Proof as to Dr. Cripe and Dr. Beaty. I am in agreement in their analysis and description of the scientific literature.

29. In inquiring of me, defense counsel made reference to the fact that there was no trichlorethylene originally contained in the cleaning products. However, that does not mean that all of the scientific literature on trichloroethylene may be ignored. 1,1,1 Tricholoroethane, perchloroethane and trichloroethylene are all chlorinated hydocarbons. The scientific literature documents that the neurotoxic effects of

these chlorinated hydorcarbons is similar. With some chlorinated hydrocarbons there maybe further unique biological effects. Trichlorocthylene can be created by mixing an weak acid with perchloroethane.

30. From the information provided there is no question Merlin Carlson was exposed to neurotoxic chemicals. Merlin Carlson's complaints at the time of the exposure and after the exposure are consistent with a toxic dose of these chemicals. Further the complaints of the other workers at the time of exposure are corroborative of an exposure to toxic chemicals.

31. In item 1 of Exhibit I, organic solvents are defined. At page 420 of item 1 in Exhibit I, it states:

> Hydrocarbons are derivatives of petroleum distillation, the major class of which includes straight chain saturated and unsaturated aliphatics, cyclic, and halogenated hydrocarbons....There are five major clinical syndromes caused by exposure to hydrocarbon products: skin toxicity, gastrointestinal toxicity, pulmonary toxicity, central nervous system toxicity, and generalized systemic toxicity. Acute or chronic exposure to hydrocarbons can result in significant skin injury. Hydrocarbons are directly irritant to the epidermal tissue and as a consequence of their high lipid solubility may cause dissolution of fatty tissues and penetration of cell membranes.

32. In lay terms "lipid" is referring to fat. The nerves and brain tissue have a significant amount of fat cells associated with the tissue.

33. I have reviewed and considered the peer reviewed the article "Organic Solvent Encephalopathy: An Old Hazard Revisited", Houck, P., Nebel, D., and Milham, S. American Journal of Industrial Medicine, 22:109-115 (1992). This article documents neurotoxic exposure of Merlin Carlson and the other workers at the 1988 PCB clean-up. This article was published in a peer review journal, indicating that it is of acceptable scientific quality as to its' data and conclusions.

34. I have also reviewed the underlying data collected by Spokane County Health Department and the Washington

State Health Department. The information collected by the Health Departments is the type of information a toxicologist would consider in evaluating a patient. The initial information collected by Ms. Nebel is impressive, since the workers did not know about the connection between their symptoms and toxic encephalopathy. The article is additional scientific research documenting solvent exposures causing encephalopathies.

35. In Houck's article a question is posed as follows:

> Most reports of solvent-related encephalopathy describe long-term exposure or very high short-term exposure with loss of consciousness. It is uncertain why persistent neurological deficits developed in two workers following relatively short periods of exposure without loss of consciousness.

Apparently, at the time this article was published Dr. Houck did not know about the reports from fellow workers about Dan Skeman's and Merlin Carlson's loss of consciousness.

36. Drs. Spencer and Schumberg identified in "Recognizing Neurotoxic Disease", "Acute intoxications associated with altered sensorium or cognitive state pose a formidable challenge because a history may be unobtainable." see page 277. A person, who has come under the intoxication of chlorinated hydrocarbons, may not realize he has had a change in a level of consciousness or much less a loss of consciousness. It maybe that the exposed worker does not realize or remember what has happened to him or her. The workers questioned by the health department may just not have remembered or realized there was a change in their level of consciousness. Fortunately, other workers were able to provide other aspects of the occupational history of the 1988 PCB clean-up. In a routine medical practice toxicologist do rely on occupational history received from co-workers. From the information made available to me both Mr. Skeman and Mr. Carlson have documented losses of consciousness.

37. The Spokane County Health Department and Washington State Health information on the exposure symptoms of the workers is supportive of Merlin Carlson's

injury. The main symptoms reported were respiratory, dermatitis and central nervous system disorders. See Diane Nebel's report.

38. The pertinent individual symptoms listed for group of workers were as follows: Headaches - 67%, Cough - 83%, Productive Cough - 54%, Diarrhea - 29%, Chest Pain - 38%, Rash - 58%, Abd. Pain - 38%, Muscle Pain - 8%, Vomit - 21%, Nausea - 50%, Memory Loss - 13%, Confusion - 8%, Dizzy - 21%, Faint - 13%.

39. Merlin Carlson was interviewed by Diane Nebel in December 1988. In Diane Nebel's investigative records indicate Merlin Carlson had the following pertinent symptoms: Headache, Dry Cough, Light Headed, Dizzy, Disoriented, Rash, and Breathing Problems when working.

40. 1,1,1 trichloroethane is a chlorinated hyrdrocarbon. Trichloroethylene is a chlorinated hydrocarbon. Perchloro-ethylene is chlorinated hydrocarbon. Chlorinated hydrocarbons are also referred to as halogenated solvents. All of these chemicals are in the same family are physically and chemically similar. They affect the central nervous system similarly. That is "all of the halogenated solvents are central nervous system depressants that produce dose-related changes in metal function and consciousness depending on the individual chemical and the duration of exposure". Hazardous Material Toxicology: Clinical Principles of Environmental Health page 736. Further, "central nervous system depression develops following exposure to high doses of all of the halogenated solvents, and most initial deaths result from respiratory depression and subsequent hypoxia." Id p. 739. Acute systemic toxicity to halogenated solvents present clinically as:

> "All the halogenated solvents are classic CNS depressants that may produce some initial excitation followed by depression of the central nervous system. The type and onset of symptoms depends on the duration of exposure, concentration, previous exposure history, minute ventilation, and individual susceptibility.

Following inhalation of high doses of these chemicals, the rapid onset of central nervous system depressions may occur manifest by dizziness, ataxia, headache, fatigue, lethargy, nausea, and abdominal pain that progresses to stupor, apnea, coma, and death." Id. 741

41. The basic central nervous system toxicities of these chemicals are essentially interchangeable. Attached as Exhibit ___ is table 64.2 from Hazardous Materials Toxicology: Clinical Principles of Environmental Health, which list the threshold levels for these chemicals. Id. p. 736 The chemicals only vary as to degree of toxicity as to their particular dosages. On top of their general toxicity, certain of these chemicals may have individual toxicities. For example trichloroethylene can cause trigeminal nerve complications. (The trigeminal nerve is in the face.)

42. The MSDS's of the cleaning products used at the 1988 PCB cleanup indicate that there was 1,1,1 trichloroethane (methyl chloroform) and perchloroethylene (tetrachloroethylene) present.

43. Attached to this Offer of Proof are photocopies of table 6.4 from Hazardous Material Toxicology: Clinical Principles of Environmental Health. I have highlighted for the Court the chemicals involved here. This is done for the Court's benefit as to identifying basic information such as the chemicals' various names, their NIOSH numbers, their molecular weight and their structural formula.

44. Chlorinated hydrocarbons, halogenatic solvents, are also known as organic solvents.

45. Most of the halogenatic solvents were discovered in the 1800's and were initially investigated as anesthetic agents. Over the years many of the halogenatic solvents fell out of use as far as anesthetic agents because of their hepatotoxic properties.

46. The breaking down of these chemicals when exposed to heat, light and other chemicals is important. For example, the addition of weak acids to tetrachloroethane (perchloroethylene) produces trichloroethylene.

47. There is extensive literature on trichloroethylene producing neurotoxic injuries to workers.

48. In evaluating Merlin Carlson's injuries, I have taken into account his past medical history including his prematurity, his school records and his work history. It is my opinion on a more probably than not basis that the aromatic hydrocarbons, the chlorinated hydrocarbons, and the other chemicals used in the 1988 PCB cleanup ,injured Merlin Carlson.

49. The pulmonary route is the main source of toxic exposure to halogenatic solvents. Chemicals such as 1,1,1 tricholorethane,. perchloroethylene and any by products such a trichloroethylene and well absorbed through both the lungs and gastrointestinal tract. The speed of absorption depends upon the transfer of the chemical through the pulmonary capillaries into the blood and the concentration of the chemical in the blood.

50. Given the fact that Merlin Carlson was found "passed out" at one point more probably than not he had reached a peak level of exposure to one of these chlorinated hydrocarbons. Since chlorinated hydrocarbons are central nervous system depressants, reports of loss of consciousness indicates there were high levels of chlorinated hydrocarbons present. More probably than not Merlin Carlson was exposed to ranges of tetrachloroethane, 1,1,1 trichloroethane and the by product trichloroethylene in amounts greater than the threshold value limits.

51. More probably than not the impairments and behavior changes noted by Drs. Beaty and Cripe were caused by Merlin Carlson's unprotected exposure to the solvents and other chemicals used at the 1988 PCB cleanup.

55. Tetrachlorethane has a prolonged elimination time. Neurological signs and symptoms following tetrachloroethylene may be delayed several hours and may last for several days. The signs and symptoms of tetrachloroethylene also include mental confusion, disorientation, poor concentration, dysarathria, ataxia,

amnesia, dysphasia and numbness. Exposure to tetrachloroethylene and the potential by product, trichloroethylene has been associated with central nervous system including headaches, irritability, emotionality, personality change, fatigue and anxiety. There have been individual case reports associated with the development of peripheral neuropathies with work place exposure to 1,1,1-trichloroethane. See Liss, G.M. "Peripheral Neuropathies In Two Workers Exposed To 1,1,1-Trichloroethane," Journal of the American Medical Association, 260:2217 (1988).

53. I have considered all of Merlin Carlson's medical history as well as his exposure history at the 1988 PCB clean-up. I have specifically considered the issue of Merlin Carlson's prematurity. It is my professional opinion that the impairments noted by Drs. Beaty, Cripe, and Lantsberger were more probably than not caused by the unprotected exposure to the chlorinated hydrocarbons, solvents, aromatic hydrocarbons, and other chemicals present at the 1988 PCB clean-up.

54. My professional opinions are based upon the information above, the material I reviewed in connection to Merlin Carlson, Dan Skeman, and was listed in three depositions taken of me, as well as my education, experience, knowledge, and background.

/s/ Daniel M. Goldstein, M.D.

SUBSCRIBED AND SWORN to before me this 13th day of January, 1994.

s/Melody M. Winter
NOTARY PUBLIC in and for the State of Colorado residing in Denver.
Commission Expires: 5/17/97

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The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTONAT SPOKANE

DAVID SCHUDEL, et al., Plaintiffs' vs. GENERAL ELECTRIC COMPANYand KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	NO. CS-92-0081-FVS DECLARATION OF DANIEL GOLDSTEIN, M.D.

I, Daniel Goldstein, M.D., hereby declare and state:

1. I have previously provided the Court with an extensive Offer of Proof and attached my Curriculum Vitae. I point out to the Court that I am Board Certified in both pediatrics and toxicology.

2. I understand that Dr. Ellisa Benedek, M.D., a psychiatrist, has testified as follows:

> Q. (BY MS MEADE) Can you identify for me any scientific literature that indicates jaundice can cause brain impairment?
>
> "A. Sure. Look at any textbook of pediatrics. Look at child psychiatry textbooks. All of them talk about premature infants, problems of premature infants and subsequent problems in growth and development. So any standard pediatric text."

3. I also understand that Dr. Benedek has testified:

"A. I have the fact that he was jaundiced. I think jaundice in an infant can contribute to CNS damage and subsequent learning problems, and that was -- Merlin had medical difficulties as a preemie in the hospital. That was one of them."

4. Attached to this Declaration are a copy of the narrative summary for Merlin Carlson. See **Exhibit A.** Of medical significance are the Apgar scores of 3 at 5 minutes and 7 at 5 minutes. Considering Merlin Carlson's prematurity, those were relatively good Apgar scores.

5. Also attached are the pediatric Nursing Notes which describe Merlin. See **Exhibit B**. On September 7, 1965, the nurses note Merlin was slightly jaundice in the face. The nurses note: color at 9:00 a.m. on September 8, 1965, color seems slightly jaundiced. Active cry and signed movement. Later that day the nurses note, baby is jaundiced, _____ in face. Merlin was noted to be active, has grasp reflex, and had no periods when his skin appeared dusky.

6. The doctors responding to the clinical signs of jaundice had blood tests for bilirubin performed. The results of 10 mg% of total and 0.2 mg of direct bilirubin are slightly abnormal or in the high range of normal. (The defined normal ranges varies depending on the institution performing the test.) His treatment by the doctors was modified. The modification in his treatments was appropriate. Thereafter, the nurses do not note any jaundice. The doctor did not order any more bilirubin tests. Clinically, Merlin's jaundice resolved.

7. Jaundice is when there is hyperbilirubinemia and there are deposits of bile pigment in the skin. All jaundice does not mean that infants have brain damage. Jaundice occurs relatively frequently with newborns. When a newborn has jaundice, a competent doctor considers whether there is any potential pathology associated with the liver's function. A competent physician is to look at the age, weight, and physiological development of the child. In Nelson's Textbook of Pediatrics, Eleventh Edition, Editor: Waldo E. Nelson, M.D., et al., W. B. Saunders Company, Philadelphia, 1979, there is a section on Jaundice in newborns. See **Exhibit C**.

Dr. Nelson's textbook notes at page 444-445:

> **Pathologic Hyperbilirubinemia**. Jaundice and its underlying hyperbilirubinemia are considered pathologic if their time of appearance, duration, or pattern of serially determined serum bilirubin concentrations varies **significantly** from that of physiologic jaundice, or if the course is compatible with physiologic jaundice but there are other reasons to suspect that the infant is at special risk from the neurotoxicity of unconjugated bilirubin. . . .

8. What this means is a doctor must apply scientific methodology to evaluating the jaundice, and blood test.

9. With Merlin Carlson it is important to note what his bilirubin and direct bilirubin levels were. It is also important to consider how he was presenting clinically. Merlin, when he was noted to be jaundiced, had a total bilirubin of 10 mg% with 0.2 mg of direct bilirubin. These test results are not an indication that there was brain damage, given his age, weight, and status of development. Such mild transient jaudice occurs fequently in premature infants and is most always well tolerated.

10. A competent physician considers tables such as the ones in Dr. Nelson's textbook. See **Exhibit C.** In applying a logical scientific methodology, a physician would consider textbook materials, as I pointed out above, and a physician would consider the clinical presentation of the patient. A child who was experiencing neurotoxicity from hyperbilirubin would be very ill. Merlin was premature, but he did not clinically presentin a manner consistant with brain damage due to jaundice.

11. A infant, who had experienced pathological hyperbilirubinemia, would develop a choreathetoid cerebral palsy, which the clinical presentation consist of unusual body movements and postures. There is also frequently deafness which develops during infancy as a result of the neurotoxicity of the bilirubin. Merlin Carlson does not have choreathetoid cerebral palsy and does not have a history or documentation of deafness before the 1988 toxic exposure.

12. Since the 1988 exposure to neurotoxic substances, Merlin Carlson has developed progressive ringing in his ears and dizziness. He complained of a progressive hearing loss. Dr. Paula Lantsberger has evaluated him for this. If a person did have pathological levels of bilirubin at birth, there would not be a 20 year plus delay in development of deafness. Also, the loss would not be progressive. More probably than not, Merlin Carlson's hearing impairments were caused by the 1988 exposure to toxic chemicals.

13. Merlin Carlson did not before the 1988 toxic exposure have the clinical presentation of choreathetoid cerebral palsy or any residual impairment from his brief jaundice episode. At the time, his clinical presentation of jaundice was not pathological,nor was it of the degree and duration expected to result in neurological injury. Based upon the above analysis, it is my opinion more probably than not Merlin Carlson did not experience neurotoxic levels of unconjugated bilirubin.

14. I understand that Dr. Benedek has not cited any scientific literature to support her position. I do not know what scientific methodology, if any, she applied in framing her opinion that Merlin Carlson's problems are due to jaundice which occuref when he was a newborn infant. However, as a Board Certified Pediatrician who has experience taking care of new born infants, and is familiar with the scientific literature, I do not believe that Dr. Benedek's opinions are based upon sound scientific reasoning.

15. I declare under penalty of perjury under the laws of the State of Washington, that the foregoing is true and correct.

DATED this _____ day of March, 1994.

/s/_____

Daniel Goldstein, M.D.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs'	)	
vs.	)	NO. CS-92-0081-AM
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION,	)	OFFER OF PROOF BY WILLIAM E. MORTON, M.D., Ph.D
Defendants.	)	

I, William E. Morton, MD, Dr. P.H., am a medical doctor.

1. Attached to this offer of proof is a copy of my current curriculum vitae (Exhibit 1). I have been a professor of environmental medicine at Oregon Health Sciences University for 21 years. Environmental medicine is a component of the Department of Health and Preventative Medicine. I am also a director of the Occupational Health Clinic. At the clinic I typically see anywhere from one to three as many as five patients a week, plus form one to three new patients. A visit with a new patient takes about two to four hours and I spend perhaps four to six hours writing up the case afterwards.

2. In the fall of 1993, I participated in a course called "Principle of Clinical Medicine" at Oregon Health Science University, and I had two sections of an epidemiology course in the Masters of Public Health (MPH) program. I have been involved in developing the program for 1994 winter and spring quarters for the follow-up epidemiology courses and I also have been involved in developing an environmental health course as part of the MPH program. I have extensive professional experience in evaluating patients for the etilology of their conditions. Over the years some of my clinical work has been published in peer-reviewed journals. My publications are attached as part of my curriculum vitae. See Exhibit 1.

3. This offer of proof is to identify for the Court the

scientific knowledge I have in the area of occupational medicine as it relates to the injuries sustained by the following persons at the Kaiser Aluminum plant in Spokane, Washington, in 1988:

Deborah Guaragna-Williams	Craig Thompson
Kathrene Froese	Timothy Schudel
Daniel Glass	David Schudel
Merlin Carlson	Ruth Hopkins
John Hopkins	

4. Further this offer of proof is to identify the reasoning and methodology underlying my opinions as to:

Deborah Guaragna-Williams	Craig Thompson
Kathrene Froese	Timothy Schudel
Daniel Glass	David Schudel
Merlin Carlson	Ruth Hopkins
John Hopkins	

5. The thesis of this declaration is that the above-named persons suffer chronic solvent-induced encephalopathy resulting form the Kaiser exposure. This declaration describes the methodology used in arriving at the diagnosis.

A. METHODOLOGY EMPLOYED IN EVALUATING SOLVENT INDUCED ENCEPHALOPATHY

The standard methodology used in occupational medicine for evaluating occupational exposure is to begin with a work up of the patient's medical history combined with a physical examination. In general, I do a long detailed history. A medical evaluation centered around the history, physical examination, and supporting laboratory findings. A patent's medical history is the major determinant the conclusions. A physician's function revolves around the ability to make a medical history and draw scientifically appropriate conclusions.

7. This method of medical evaluation is generally accepted in occupational medicine. During the 1980s and subsequently, there has been a great deal of interest in solvent-induced encephalopathy among occupational health

professionals. There has also been interest among paint and solvent manufacturers. Encephalopathy product warning labels have been strengthened and made more specific and text books have been expanded to cover this particular topic. There is general acceptance of the risks of chronic encephalopathy from unprotected organic solvent exposure. The standard of occupational medicine practice requires attention to this hazard in protection of workers from this hazard. Any claim to the contrary is patently false.

8. As a professor of environmental medicine I am required to not only publish articles that add to the current literature in the field, but also to keep current with the work of others. My list of publications is attached to this declaration. A sample of my most current reading in the area of solvent injury which supports my methodology, is as follows:

a. P. Arlien-Soburg, Solvent Neurotoxicity (1992);
b. W. Rom, Environmental & Occupational Medicine (2d Ed. 1992);
c. J. Ladou, Occupational Medicine (1990);
d. V. Riihimaki, U. Ulfvarson, Eds., Safety & Health Aspects of Organic Solvents (1986);
e. A. Englund, K. Ringen, M. Mehlman, Eds., Occupational Health Hazards of Solvents (1982);
f. R. Singer, Neurotoxicity Guidebook (1990);
g. J. Valciukas, Foundations of Environmental and Occupational Neurotoxicity (1991);
h. C. Zens, C.B. Dickerson, E. Horvath, Eds., Occupational Medicine (3rd Edition (1994); specifically, the following chapters:
   (1) D. Axelson and C. Hogstedt, "The Health Effects of Solvents", 764-778, (262 references);
   (2) K. Ekberg, M. Hane, and T. Berggren, "Psychologic Affects of Exposure to Solvents and Other Neurotoxic Agents in the Work Environment", 779-789, (78 references); and,

(3) A.M. Seppalainen, "Occupational Neurotoxicology", 790-799, (91 references).

9. In practice the scientific criteria for a diagnosis of solvent induced toxic encephalopathy have been established. I discuss the criteria in my deposition. The criteria include the following procedures and universal impairments. The procedure is to take a history, do a physical examination, and at a minimum have neuropsychological testing performed. Depending on the results, additional testing and referral may be performed. In taking a history there are three universal symptoms, which with testing become recognized as three universal impairments. The three symptoms/impairments include memory difficulties, deficits in concentration, and pronounced irritability, sometimes referred to as a personality change. The memory problem occurs particularly with recent memory. For example, patients may not remember what was said 20 minutes earlier. The concentration difficulties effect all tasks of daily living and work. The pronounced irritability is manifested as easy anger, easy crying, or withdrawal from social activities. Families may characterize the irritability as a change in personality, or state that the person is more difficult to live with or work with.

10. Because of significance of effect and/or inability to perform case-control or other designed studies, responsible physicians often have anecdotal reports published. One of the goals is to alert others to providing protection to persons around chemicals. A second goal is to generate awareness among other health care providers. At times one must be aware of potential harm before the harm can be assessed. For obvious reasons with neurotoxic injuries these two goals are very important. With anecdotal research the reliability is controlled by consistency between the various reports and what is already known about a chemical.

11. As a physician I am familiar with neuropsychological evaluations. However, the details of what and how to do neuropsychological testing is not within the realm of a medical doctor's evaluation. Neuropsychologists

are psychologists, who have had additional and special training in the area of neuropsychology. An analogy is a neurologist. A neurologist has vast knowledge about the nervous system. A neurologist has knowledge about the conditions, which may be amenable to treatment. A neurologist may refer a patient to a neurosurgeon to have a consultation for the risk and benefits of a particular surgery. For the neurologist, knowledge is limited regarding what and how the neurosurgeon performs the surgery. Likewise a neurosurgeon may refer a patient to a neurologist to rule in or out other non-surgical conditions. There, the neurosurgeon is attempting to determine whether a condition is amenable to surgery.

12. Another example is with the pathologist. Most physicians have a working knowledge of what laboratory tests to order to make a diagnosis. Most physicians have a working knowledge of how to utilize the results in forming a diagnosis or ordering more tests. However, the intricacies of how the tests are performed are not necessarily known to all physicians. For example, for a cardiologist to treat high cholesterol, he does not need to know how to perform the test. The cardiologist does need to know the results of the test. The relationship is essentially the same between a physician and a neuropsychologist. In regarding neuropsychological testing, I do not determine the criteria by which psychologists recognize organic impairment. However, I rely on their statements concerning organic impairment. It is important to me that psychologists be consistent in diagnosing organic cognitive impairment. However, in making an evaluation of such impairment as "short term memory loss" I refer to something we use clinically in the medical exam. It is not a term psychologists use. They are much more specific. In order to reach a diagnosis of toxic encephalopathy I would use the reports of neuropsychologists. I need them to interpret the neuropsychological test results and to make a diagnostic statement as to their impressions. As the primary physician I also make a diagnosis of the patient's condition.

In making a diagnosis I use the neuropsychologists' diagnostic impressions, plus all other data I have collected on the patient. After analyzing all of the above, I make a clinical diagnosis.

13. Basic to an evaluation is the report of a neuropsychologist. I routinely use neuropsychologists in the testing of my own patients. I refer my patients primarily to neuropsychologists at Oregon Health Sciences University. I utilize what the neuropsychologists report in the summary and in their detailed descriptions of each test result. I look to the detailed information to make an independent judgment as to the reliability of neuropsychologists' diagnostic impressions.

14. In routine health care a doctor has an adaptable plan for arriving at a diagnosis. This type of plan is taught to most students of health care sciences. First, a patient's complaints are determined. A history is obtained either by questionnaire and/or orally. A general physical examination is done. Then the doctor arrives at a differential diagnosis. This is a list of possible conditions. Arriving at this list is a way for the doctor to direct further evaluation of a patient. Based upon the differential diagnosis, the doctor obtains appropriate testing, consultation with other specialists, and perhaps future examination. After all of this information is obtained the doctor considers it to make a scientific logical consideration of the cause of the patient's condition. Then the doctor makes a diagnosis of a patient's condition.

15. An example of this methodology is found in an article I co-authored, Organic Solvent Induced Encephalopathy In Industrial Painters, 28 Journal of Occupational Medicine, 119-125 (1986). This was the study of 15 industrial painters done over a period of 14 months at the Occupational Health Clinic at Oregon Health Science University. These painters had reported for complaints they related to their work. The painters completed the clinic's 12 page questionnaire. It provided information about their symptoms, job characteristics, and exposures, work histories, health problems, and family and reproductive histories. It is a questionnaire used for all types of workers. The painters

were assessed according to their symptoms relating to their work site exposures.

16. The physical examinations were performed. A patient's history directs the physical examination. Given the histories of exposure, particular attention was directed to those components indicative of the painter's symptoms. Neurologic consultation was obtained in six painters. Laboratory evaluation included standardized multichannel automated chemistry panels, urinalysis, and complete blood counts, which were obtained on all patients. Based upon the physical examination, neuropsychological evaluations were performed on all 15 painters. This included a patient interview, the revised Wechsler Adult Intelligence Scale (WAIS-R), measures of auditory and visual memory function, a verbal learning test, and Rey-Osterreith Complex Figure Test, the Halstead-Reitan Neuropsychology test battery, aphasis screening test, and the Minnesota Multiphasic Personality Inventory.

17. In the neuropsychological evaluation, assessments included motor functioning, auditory perceptual sensitivity, spacial perception/construction/reasoning, new learning and memory, attention/ concentration/tracking, and higher order cognitive functions.

18. Based upon the results of examination psychiatric interviews were obtained for 4 patients; neuropsychological and neurological evaluations and additional assessments were made on some of the patients. The additional assessments were made on some of the patients. The additional assessments were kymographic (CT) brain scans for three, EEG for eight, electromyogram (EMGs), and nerve conduction velocity measurements for seven patients.

19. The group of 15 painters were compared with 30 nonpainters. The 30 nonpainters were similar in age, sex, and education level.

20. Duration of exposure for the painters varied widely. The variation was form weeks to years. Based upon the histories, there was variation in exposure. Some of the

exposures were for limited times, when inadequate or absent personal protection was not available. Some of the exposures were over years, where there were not reports of dramatic lapses in personal protection. All the painters described the recurrent symptoms consistent with recurrent acute organic solvent intoxication. These included episodic feelings of drunkenness, ataxia, dysarthria, nausea, shortness of breath, dizziness, headache, disorientation, and occasionally, combativeness.

21. Painters differed from non-painters in relating significantly higher frequencies of poor memory, personality change, sleep disturbance, taste-test smell abnormalities, dizziness, headache, decreased coordination, and chronic cough. None of the control group expresses these symptoms or complaints. Key symptoms were, diminished short-term memory function and a change in personality, often more noticeable to family members or close associates than to the painters themselves.

22. Painters and nonpainters did not differ significantly with respect to other common symptoms, including tension, nervousness, morning fatigue, indigestion, or back pain.

23. Laboratory evaluation and specialized diagnostic testing was performed on all of the painters. Base line pulmonary functions testing was done on all, as was methacholine challenge testing (at least a 20% reduction in FEV).

24. Neuropsychological testing verified symptoms of cognitive disturbance. A larger proportion than 16% of the painters scored one standard deviation or more below the normative means. The painters as a group also demonstrated clinically significant elevations on MMPI scales measuring somatization depression, hysteria, anxiety, and schizoid tendencies.

25. The results of this study confirmed the existence of chronic encephalopathy among organic solvent-exposed painters. From this study scientific conclusions were made. Painters had significantly higher prevalence rates of

symptoms, previously described as neurasthenic syndrome, then did control workers. Neurologic examinations showed mild distal neuropathy in four painters. Neuropsychologic evaluation showed learning and memory deficits, impaired neuropsychologic functioning, and personality problems. Five painters had sensory motor peripheral neuropathy on EMG and nerve conduction studies, and three had focal paroxysmal EEGs, confirming a clinical suspicion of partial complex (temporal lobe) epilepsy. Painters demonstrated a spectrum of severity of symptoms and signs ranging form those with symptoms of the neurostethic syndrome, but only mild abnormalities on neuropsychologic and nerve conduction studies, to those with evidence of both organic brain syndrome and peripheral neuropathy. Job retraining in this latter group has proven difficult because these painters have difficulty learning new skills.

26. These diagnosed toxic encephalopathies, included both the neurasthenic symptoms, and complex and objective neuropsychologic deficits. Based upon the evaluations and scientific research, it was concluded the etiology of the toxic encephalopathy was solvent exposure.

27. The findings in the above-study are consistent with other scientific research published in peer review journals. The method we used in investigating these solvent induced encephalopathies was a recognized scientific method. Other scientific researchers have found similar results solvent exposure.

28. In Sweden, organic solvent induced neurologic and neuropsychologic problems have been the subject of intensive investigations for more than 10 years. Patients with these diseases now constitute the largest group of patients seen at many occupational medical clinics there. The Swedish researchers have found availability of neuropsychologic testing has resulted in a method to screen for early CNS dysfunction in individuals at high risk for neurotoxic syndromes. It also permits objective verification of neurologic and psychotic deficits in patients with neurostethic

symptoms. Cognitive deficits and personality changes can be documented.

29. The European countries began their scientific research into chemical neurotoxic insults well before the United States. For this reason the United States and Canadian researchers and doctors look to Europe for reliable scientific data. Probably because the European countries had the scientific research earlier, there has been a longer history of awareness of potential worker risk. This has resulted in there being a routinely more sophisticated evaluation of exposed workers. For example, neuropsychological testing is done routinely with most workers.

30. Review of scientific publication on behavior toxicology highlights the role of neuropsychologic testing and the diagnosis of occupationally related organic brain syndromes. All of my fellow authors of the report offered several recommendations for the evaluation of organic solvent exposed individuals with neuropsychologic symptoms:

a. A history of otherwise unexplained acute intoxications while working, suggesting excessive exposure, should be sought.
b. Patients should be asked about memory problems and personality changes, and this history should be conformed by family members.
c. If the history suggests possible toxicity, psychologic evaluation, including specific tests of intelligence, memory, personality, and neuropsychologic function, should be obtained.
d. Screening tests for other potential medical, toxic, or psychiatric conditions should be ruled out.
e. Previous measures of intelligence and personality, if available, can assist the psychologist in making a determination as to whether deterioration form a premorbid level of functioning has occurred.
f. Psychiatric evaluation is useful in some patients to evaluate assess the underlying psychiatric conditions.

g. EMGs, nerve conduction velocity measurements, EEGs, CT brain scans, and other anatomic and physiologic tests of nervous system integrity should be obtained as indicated on an individual basis.

31. A caveat on underlying psychological conditions is n order. A patient may have an underlying psychological condition. If solvent-induced encephalopathy is superimposed on an underlying psychological condition, the difficulties caused by the solvent injury may be more pronounced, or there may be an aggravation of the underlying psychological condition.

32. The neuropsychological substantiation of the diagnosis of solvent induced encephalopathy is well established in the most recent literature and progress in the field. For example, Dr. Herbert Schaumberg clearly endorses this concept. Dr. Schaumberg most recently described a case of solvent induced encephalopathy that he had diagnosed according to the standard criteria which we discuss today. In short, any statement that cognitive impairment diagnosable by neuropsychological testing are basically without scientific foundation is untenable and is not supported by the general medical toxicological literature.

33. While the literature on the subject is vast, some examples of literature can be mentioned form both the United States and foreign studies, including studies form Scandinavia. For example, *see:*

a. S. Elofsson, F. Gamberake, T. Hindmarsh, *et al, Exposure to organic solvents: A cross-sectional epidemiological investigation on occupationally exposed car and industrial spray painters with special reference to the nervous system,* 6 Scand J Work Environ Health, 239-273 (1980);

b. K. Lindstrom, *Changes in psychological performance of solvent-poisoned and solvent-exposed workers,* 1 Am J Ind Med, 69-84 (1980);

c. U. Flodin, C. Edling, O. Axelson, *Clinical studies of psychoorganic syndromes among workers with exposure to solvents,* 5 Am J Ind Med 287-295 (1984);

d. A.M. Seppalainen, *Applications of neuropsychological methods in occupational medicine,* 1 Scand J work Envrion Health 1-14 (1975);

e. F.L. Baker, R.G. Feldman, R.F. White, et al, *Monitoring neurotoxins in industry development of a neurobehavioral test battery,* 25 J Occup Med, 125-130 (1983);

f. J. Juntunen, V. Hupli, S. Hernberg, et al, *Neurologic picture of organic solvent poisoning in industry: A retrospective clinical study of 37 patients,* 46 Int Arch Occup Environ Health 219-231 (1980);

g. P. Arlien-Soborg, P. Bruhn, C. Gyldensted, *et al, Chronic painter's syndrome: Chronic toxic encephalopathy in house painters,* 60 Acts Neurol Scand 149-156 (1979);

h. K. Husman, *Symptoms of car painters with long term exposure to a mixture of organic solvents,* 6 Scand J. Work Environ Health 19-32 (1980).

B. SOLVENT EXPOSURE DURATION FOR CHRONIC ENCEPHALOPATHY

34. I have been made aware of defense counsel's contention that diagnosis of solvent-induced encephalopathy may not be established if the person has had less than 20 years of exposure to organic solvents. Such a contention is not supported by the scientific research or by my over two decades of experience in this area of medicine. In addition too the discussion above of the scientific literature, I point out a few of the many scientifically reliable reports to the contrary. The medical literature on this topic amply demonstrates that there are wide variations in duration of exposure prior to symptomatic manifestations of

encephalopathy, as would be expected, since people can vary widely in susceptibility to neurotoxic chemicals.

35. The most recently reported cases of persistent encephalopathy following short0term solvent exposure are two laborers reported from Spokane, one of whom had one month of exposure and the other with three days exposure in an enclosed stairwell (Am J Indust Med 1992:22:109-115).

36. In his Neurotoxicity Guidebook, Singer's first neurotoxicity case report described a man who developed organic cognitive impairment after only 6 months of solvent exposure (Van Nostrand Reinhold, NY, 1990, P. 94-99). The absence of a significant effect of duration of solvent exposure on the likelihood of persistent cognitive impairment has been from Pittsburgh (J Occup Med 1990:32:444-450) and from the Netherlands (Am J Indust Med 1989:16:707-718).

37. Hodgson and colleagues in Cincinnati described two cases with impaired cognition persisting for 6-18 months following a single exposure (J Occup Med 1989:31:51-4).

38. Stollery and Flindt, in England, described 8 women with 3 days of unprotected solvent exposure whose measurable cognitive impairment lasted at least 8 months after the exposure had been controlled (Scand J Work Envir Health 1988:14:45-8).

39. Our own clinic reported 15 cases of chronic encephalopathy, of which two had total solvent exposures of only 3-4 months (three had over-exposures of only 5 to 8 weeks) before manifesting serious permanent cognitive impairment (Linz, et al., J Occup Med 1986:28:119-125).

40. A definitive description of solvent neurotoxicity by Baker and Fine did not include a criterion of duration of exposure below which chronic encephalopathy would not occur (J Occup Med 1986:28:126-9).

41. Feldman and coworkers have reported cases with 1.5 hours of solvent exposure, followed by impaired neuropsychological performance which persisted after 18 years of follow-up (Am J Indust Med 1985:8:119-26).

42. 42. Buxton and Hayward described four cases

exposed to trichlorethylene for one day, of which one died 51 days later and showed extensive nerve cell loss in may parts of the brain (J Neurol Neurosurg Psychiat 1967:30:511-18).

43. Parsons and Parsons reported two cases of toxic encephalopathy in two young men whose solvent exposures had been 3 and 12 months, respectively (J Indust Hyg Toxical 1938:20:124-33).

44. Donley reported a case of toxic encephalopathy after only 6 months of solvent exposure (J Indust Hyg Toxical 1936:18:571-7).

45. There are, of course, many more published reports of chronic encephalopathy caused by much longer exposures, but these reports should suffice to document that long-term cognitive impairment can result from relatively brief solvent exposures.

46. Individuals differ. The primary criteria recognition by the testing neuropsychologists are that the individual being tested had organic cognitive impairment as opposed to functional cognitive impairment. The functional impairment would be a variable degree associated with things like depression or other emotional states. But the organic cognitive impairment would represent a consistent limitation which would seem to be involved with missing neuronal function. So that once it is in place, then that is a sufficient statement. There does not have to be a numerical degree beyond that, nor does there have to be a specific limitation to, for example, visual spacial abilities as opposed to verbal abilities. There are some statements in the literature that address visual spacial function as being a specific requirement. However, my professional observation is that this is true in some patients, it is certainly not true in all. Individuals do vary as to what is affected the most and what type of function is specifically involved. For example, some individuals will have the major deficit in their attention and concentration ability; while others will have it in the visual spacial area; others may be in the learning and memory in the presence of distraction; and some patients will have multiple deficits.

47. In the scientific literature the duration of exposure varies widely. In groups of workers studied the duration of exposure may vary from days and weeks to as many as 20 to 30 years. In some groups that workers are exposed for only minutes. This variation is so striking in that there are no criteria for duration of exposure in relation to this diagnosis. Any duration of exposure is acceptable and compatible with the findings described above. The very short exposures are alarming. Frequently, the exposures indicate very severe over-exposures and/or very susceptible nervous systems.

48. These short exposures are of special interest for a variety of reasons. The very short exposure durations represent one end of the distribution curve of all possible exposures. The fact that these exposures are at one end of a distribution curve does not make them invalid or scientifically questionable. Nor are they required to be typical of all exposures. They simply happen. Short-term exposures are within the recognized limits of duration o f exposure which can produce permanent effect. There is no requirement that exposures have an average or long duration before a diagnosis is tangible.

C. APPLICATION OF THIS METHODOLOGY TO DEBORAH GURAGNA-WILLIAMS

49. When I was consulted in this case I was requested to examine Deborah Guaragna-Williams. In my examination I followed the methodology described above. I examined the records of Ms. Guaragna-Williams and looked at the descriptions of evaluations by Dr. Lantsberger and Dr. Rosenberg. in anticipation of Dr. Rosenbert's testimony, I make the following observation. Dr. Rosenbert's examination findings are most consistent with a solvent insult. However, Dr. Rosenberg's conclusions are not consistent with well recognized reliable scientific authority. Further, I have been made aware that Dr. Rosenberg was not provided within formation as to what chemicals the workers were exposed. Knowing the chemicals a worker was exposed to is fundaments to making a diagnosis. further, as I indicated in

my deposition I disagree with Dr. Rosenberg in some very fundamental ways. For example, he equivocates when he described dementia as a potential effect of solvent exposure, in a recent chapter he wrote on hazard material toxicology. He states in that book that descriptions of cognitive impairment diagnosable by neuropsychological testing are basically without scientific foundation. That is a private opinion of his which is not supported by the general medical toxicological literature. In such holding, Dr. Rosenberg is shutting himself off from a very large amount of progress in the field. Thus, while I read Dr. Rosenberg's report in evaluating Deborah Guaragna-Williams out for tests I thought were appropriate. In examining Ms. Guaragna-Williams I did an interview which took about three hours. We went through all of the symptoms that seemed important to her. Ms. Guaragna-Williams' history was medically significant. Her report of symptoms was consistent with the criteria for solvent-induced encephalopathy. Below are factors which are pertinent to the diagnosis.

50. She reported respiratory difficulty, cognitive impairment, and bone aching since her exposure in November 1988. Her significant exposure history was that she had worked six days before she was unable to continue at the Kaiser plant. She was working at a level immediately beneath the smelter pot lines and windowless rooms housing transformers, capacitors, and other electrical equipment, cooling tubes, and a furnace. There was no ventilation system, and no fans were in use when she worked there. She had been hired to clean-up PCBs. PCBs were difficult to clean off the surfaces, and the workers were given several cleaning materials to use, and these were used individually or together. The crew was said to have been told that the cleaning agents were like "409". In actual fact, these materials were significantly more toxic and required more protection than the paper masks, paper suits, thin rubber galoshes, and platex gloves that were issued for the crew and became wet or punctured while in use. Ms. Guaragna-

Williams said she used more CAPSUR than anything else. it contained a variety of aliphatic and aromatic hydrocarbons as well as butoxyethanol. Another cleaner was Heavy Duty Degreaser, composed of 1-1-1-Trichloroethane and perchloroethylene. Alkaline cleaner contained caustic soda, a metasilicate, a glycoleher, and three phosphates. Power cleaner contains silicates, phosphates, glycolether two detergents, and EDTA (chelator). She worked a 10 hour a day sift and because of her small size she was assigned cleaning duties in close quarters. The clean-up crew was forbidden to fraternize with the regular plant work force and even to use the regular lunch room. There was a great deal of aluminum dust.

51. From the beginning of the clean-up job solvent fumes and skin contact would produce symptoms of intoxication: giddiness, euphoria, light headedness, unsteady balance, nausea, and sometimes vomiting. By the end of the shift she would feel abnormally sleepy, severe headache, anarexic (like a hangover). It was hard for her to urinate. On waking the next day, she felt like had the flue, but virtually all of the crew had the same symptoms. Whenever the paper suit got wet with the cleaning agents, the skin underneath would redden and develop a burning sensation Typically during the work shift, she would develop numbness of the cheeks, mouth, tongue, hands, and bottoms of feet. From the first day on, the dust made her cough, which often developed into paroxysms (whooping) which would be accompanied by chest soreness and difficulty breathing. By the second day she had a persistent sore throat, hoarseness, nose bleeds, and abdominal pain. Many co-workers also had the symptoms of intoxication, cough, and skin redness. Her respiratory tract was so irritated that she cut her smoking to very little. Her coughing was sufficiently violent to break three ribs. The whites of her eyes developed a yellowish tinge. After six days of work and feeling worse and worse, her boyfriend took her home to Vancouver for medical attention. She recalls feeling mentally confused, unsteady balance, having a tremor

(shaking) of hands and chin, having swollen fingers, having marked external dyspnea, and getting some respiratory relief from a friends bronchodilator.

52. Subsequent medical examinations following her return to Vancouver found her noting fatigue, dyspnea, cough, and abdominal discomfort. An examination found harsh breathing sounds and expiratory wheezes bilaterally and the diagnosis was work related asthma and bronchitis. With a bronchodilator, prednisone, and antibiotic therapy, her cough and wheezing largely cleared over the subsequent two weeks, although she continued to have exertional dyspnea, fatigue, and respiratory reactively to air borne irritants and odors. She also continued to have problems with lessity balance and impaired thinking ability, such as poor short term memory, difficulty maintaining concentration, and abnormal irritability. She had uncharacteristic trouble understanding things. She would forget what she had said or purposes of errands. Limited exertion would bring on breathing difficulty in which the sensation of her throat closing off was greater than a sensation of chest tightness.

53. After the Spokane exposures, she has had recurrent episodes of mild tremor (shaking) of hands and chin. She also has had periods in which certain bones ached: a.) fermurs (worse than toothache); b.) whole hands up to wrists (at such times the fingers might swell and look like sausages); c.) upper and lower arms; d.) hip pain (sometimes gave way). She has had episodes of lower abdominal cramps radiating through to the back, at times other than menses. She has had frequent frontal headaches, sometimes quite severe. During periods of upset or excitement she has had blank spells in which she seems to lose track of things for 1-2 seconds; her eyes have seemed a little blank, but she has not lost consciousness or had muscle spasm, tongue-biting, incontinence, or postictal sleepiness. All of these intermittent neurologic symptoms have persisted since the Spokane exposures without a satisfactory diagnosis.

54. The above information has been a paraphrase of the

examination I conducted on Ms. Guaragna-Williams' on July 19, 1993. Rather than paraphrase or summarize the rest of the report, attached as Exhibit 2 to this offer of proof is examination labeled "Progress Record, 7/19/93, Occupational Health Clinic."

55. The occupational history, the history of Ms. Guaragna-Williams' symptoms at the time of the exposure, and immediately after, are consistent with an acute high dose exposure to solvents. Her personal history, medical history, and response to medical interventions, as well as my examination and testing are most consistent with my diagnostic impressions listed below:

a. History of unprotected work place overexposure to PCBs, solvents, and caustics in Oct.-Nov. 1998.

b. Occupational chronic asthmatic bronchitis.

c. Chronic solvent-induced encephalopathy.

d. Suspect chemically-induced porphyria activation.

56. These impressions state to a reasonable degree of medical certainty, that is on a more probable than not basis.

D. <u>THIS METHODOLOGY CAN BE GENERALLY APPLIED TO EVALUATE THE MEDICAL RECORDS OF</u>:

Craig Thompson
Kathrene Froese
Daniel Glass
David Schudel
Timothy Schudel
Merlin Carlson
Ruth Hopkins
John Hopkins

57. I have examined the records of Ms. Guaragna-Williams' coworkers, other than Dan Skeman, Merlin Carlson and John and Ruth Hopkins, and have looked at descriptions of evaluations by Dr. Lantsberger and Dr. Rosenberg. I familiarized myself with the approximate status and I am under the impression that their symptoms are much like hers. The extent of my opinion is that everything that I have seen so far in the description of the situation has led me to believe that

they have had respiratory neurological complaints and syndromes which are probably well reflected by the diagnosis that I made regarding Deborah Guaragna-Williams. The degree of impairment varies with each patient. The degree is reflected in each respective patient's medical records.

58. This methodology and similar conclusions can be applied to other workers injured in this exposure, including Dan Skeman, John and Ruth Hopkins and Merlin Carlson. Comparison can be made between the study done on the painters, referred to above, and a study of the Kaiser incident, published by P. Houck, *et al*, Organic Solvent Encephalopathy: An Old Hazard Revisited, 22 Am J Indust Med, 109-115 (1992). The article also provides further references in the literature to such exposure, including discussion of short duration exposure. See also, Dick, Short Duration Exposure to Organic Solvents: The Relationship Between Neurobehavioral Test Results and Other Indicators. 10 Neurotoxical Terital 39-50, (1988).

I DECLARE under penalty of perjury under the laws of the state of Oregon, that the foregoing is true and correct.

DATED this 17th day of January, 1994.

/S/_____

WILLIAM E. MORTON, MD, Ph.D.

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The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON AT SPOKANE

DAVID SCHUDEL, et. al., Plaintiffs, v. GENERAL ELECTRIC COMPANY, a foreign corporation; and KAISER ALUMINUM CORPORATION, a foreign corporation, Defendants.	))))))))	NO. 92-CS-0081-FVS DECLARATION OF SAMUEL MILHAM, JR. ON OFFER OF PROOF

Samuel Milham, Jr., M.D. declares and states:

1. I am a physician licensed by the State of Washington. I am an epidemiologist. A copy of my Curriculum Vitae is attached as Exhibit A.

2. I have numerous degrees and experience in the area of science, including a background in chemistry.

3. I received my first medical degree in 1958. I have a Masters of Public Health Degree from John Hopkins School of Hygiene and Public Health 1961. I have extensive post-graduate study in epidemiology. In 1966 I became an diplomate of the American Board of Preventive Medicine.

4. I have worked and taught in the area of chronic disease epidemiology for the last 32 years.

5. I have worked for the State of Washington Health Department in various capacities in the epidemiological section.

6. I have special interest and experience in the area of occupational and environmental epidemiology.

7. I have published over 65 articles in various peer review journals primarily in the area of epidemiology and occupational health.

8. I have worked extensively with the industrial community of the State of Washington in occupational health.

9. For over ten years I have conducted a mortality monitoring at the Kaiser plants in Spokane. A mortality monitoring study is a type of epidemiological investigation. This area of my investigative experience was discussed in the deposition. I am familiar with occupationally caused diseases and injuries in Spokane, Washington.

10. In my various professional capacities for the State of Washington, I have conducted Health Hazards Evaluations and epidemiological studies with and for most the major industrial employers in the State of Washington, i.e., Boeing, Kaiser and Weyerhaeuser. I am familiar with and have had experience with workers who have been exposed to organic solvents. I have professional experience in investigating the health implications of workers exposed to organic solvents. I am familiar with the chemicals used in the 1988 clean-up at the Kaiser plant.

11. I am familiar with state and federal regulations that were and are designed to protect workers from injuries from exposure to hazardous chemicals.

12. I am familiar with and have conducted numerous of epidemiological investigations of occupational caused diseases.

13. I am familiar with and have conducted numerous of investigations, where there is a question of toxic injury to workers.

B. GENERAL METHODOLOGY OF EPIDEMIOLOGY

14. I have been advised by plaintiff's counsel that the court needs to review the methodology that I applied to the investigation of the 1988 PCB cleanup at the Kaiser-Trentwood Plant in Spokane, Washington. Further, I have been advised that the court is questioning the methodology

that was applied to the peer review article which was is entitled: "Hazardous Solvent Encephalopathy: An Old Hazard Revisited" by Peter Houck, M.D., Diane Nebel, B.A., and Samuel Milham, Jr., M.D., MPH, American Journal of Industrial Medicine, Vol. 22, 109-115 (1992). A copy of the article is attached as Exhibit B to this Declaration.

15. In general terms Plaintiff's counsel has explained to me the law of a case Daubert v. Merrell Dow. From my understanding of the law, the Court is askING for the same creditability scientists ask from one another in scientific research and publications.

16. The question of whether my opinions are logical scientific conclusions have previously been addressed by my peers. The Health Hazard Evaluation that we performed at Kaiser was a state of the art investigation. We followed the format used by NIOSH. The results of our investigation were scrutinized by the editorial board of the American Journal of Industrial Medicine. They found our scientific methodology to be sound. They published our article. The health effects of these chemicals has previously been scientifically established. I point the Court to the Material Safety Data Sheets (MSDS's). The MSDS's on the chemicals are as a result of previous investigations, studies and scientific documentation of the effect of the individual chemicals on persons.

17. In conducting the Health Hazard Evaluation in 1988 we used a standard medical process known as a differential diagnosis. The Health Hazard Evaluation was originally conducted because there was a reported case of Legionella. We ruled out Legionella infection. We ruled out PCB's as being the cause of the workers' complaints. The only other agents left were the solvents and detergents used in the clean up. The solvents and detergents used in the clean up are scientifically known and documented as causing the type of conditions that some of the workers had. I shall now discuss my methodology in more detail for the Court.

18. I am familiar with a court's need to know the methodology that I have applied. In my work for the State of

Washington the methodology applied to my investigation has been reviewed and presented to a variety of tribunals as well as legislative committees.

19. To concisely present this information, I have referred Mr. Dawson to the textbook, Primer of Epidemiology, by Dr. Gary D. Freedman, McGraw-Hill Book Co., New York 1974. This is a basic textbook, which would be used by a medical student or a medical practitioner. I use this textbook to teach students.

20. I have suggested that counsel purchase this book, so the book can be made available to the court in the event there is a question about my offer of proof and the authority for my statements.

21. Epidemiology is a well-established area of medical science. The methods used in epidemiological studies have been extensively researched and validated. Basic epidemiological methods are taught to every medical student in the United States.

22. Epidemiology is fundamental to medical science. However, epidemiology is different from the clinical practice of medicine. Epidemiology involves groups of people, where clinical medicine involves individual patients. In epidemiology the individual patients are scientifically investigated. Then the entire group of patients and the results of the investigation are studied.

23. Epidemiology is intimately involved in the clinical practice of medicine. Treating physicians regularly use epidemiological knowledge in the diagnosis and treatment of diseases in patients. For example, epidemiology investigations are conducted as drug trials and to evaluated various medical treatments. Another example is the body of medical knowledge concerning AIDS. Epidemiological studies were conducted to determine who had the syndrome and what habits were associated with development of the syndrome. From the epidemiological studies other medical scientists began looking for an infectious agent as the cause of AIDS. Without epidemiological studies medical science would be in

the dark ages.

24. An epidemiological investigation is based upon the observation of natural differences in exposures on the outcomes among subjects. From the questions that were asked of me in the deposition, there may be some confusion between an epidemiological investigation, such as Health Hazards Evaluations, and experimental studies.

25. In a true experimental design the treatment or exposure is entirely under the control of the investigator. In contrast epidemiological studies do not control the exposure or treatment, but instead control the selection of study subjects and the method of analysis.

26. An epidemiological investigation plays an important role in the science of medicine in determing the cause of toxic disease. For it is simply not feasible, or necessarily ethical, to consider conducting experiments on humans to learn the cause and effect relationship between toxic chemicals and exposure.

27. The Health Hazard Evaluation done on the 1988 PCB clean up was routine. Usually Health Hazard Evaluations are done when workers contact NIOSH or state health departments about contamination or exposure to toxic chemicals. Then a Health Hazard Evaluation is performed. Here the only difference is that the health department was contacted to perform a Health Hazard Evaluation of a potential Legionella out break. In investigating we found that there was not an out break of Legionella in this group of workers. The Health Hazard investigation was modified to address what the source was of the workers' complaints. It is not unusual for the investigators to consider other sources of hazards than the source originally suggested.

29. Studies of exposures to toxic hazards can be classified in three different categories: 1) descriptive, 2) etiological or analytical, and 3) interventional.

30. Descriptive studies record the occurrence of illness or effect in individuals under different exposures. These types of studies are frequently used in regard to the cause and effect

relationship between hazards and exposures. Descriptive studies are used for identifying risk factors; identifying trends; identification of the theory of the cause and effect relationship of exposure; and for determining background levels of chemicals.

31. Etiological or analytical studies are an attempt to establish a causal relationship between hazards and disease or toxic conditions. These types of studies provide a temporal ordering of cause and effect control of confounding factors and identify consistency with the plausible mechanistic theories. These types of studies also denominate dose-effect relationship.

32. Intervention studies are used to support a cause and effect inference. They are used to establish successful programs designed to control toxic hazards.

33. If one wanted to do some specific reading on epidemiology, biostatistics and toxicology, I would refer you to an Introduction to Epidemiological Methods by Kahn, H.A., Lilienfeld A.N., Editor, Monographs in Epidemiology and Biostatistics, New York: Oxford University Press (1983), Modern Epidemiology by Rothman K.G., Little Brown, Boston, 1986 and Statistics for Toxicology, Salisburg, D.S., Bekker New York 1986, and Chapter 6 by Steve Piantotadosi, M.D., Ph.D., Epidemiology and Principles of Surveillance Regarding Toxic Hazards in the Environment from Hazardous Materials Toxicology: Clinical Principles of Environmental Health, Editors, John B. Sulivan, Jr., and Gray R. Krieger, Williams & Wilkins, Baltimore, 1992.

34. Research scientists, toxicologists, occupational medicine specialists and research epidemiologists attempt to estimate the increased risk that exposures to toxic substances pose to persons.

35. Epidemiological studies have provided medical science with a large body of knowledge as to the etiology of most diseases. In determining the cause of disease, epidemiologists have developed different scientific methods for analyzing relationships. One view of causation of disease,

particularly infectious disease, is in tripartite term. The terms are 1) the agent, 2) the environment and 3) the host.

36. For example, in the 1988 PCB clean up, the hosts were the laborers and engineers. The environment included the Kaiser Trentwood Plant and what was in that environment. In the beginning the Health Hazard Investigation hypothesized the agent was Legionella. This was ruled out by laboratory tests. In the Health Hazard Investigation, it was apparent a group of the host had a common illness. We then began looking for other logical agents. An obvious agent was PCB. The PCB's were ruled out by exam and laboratory tests. The remaining agents were the solvents and detergents used in the clean up. We then gathered information on the health implications of the chemicals used. The data confirmed the chemicals used caused the illnesses the workers had. We then looked again at the host. We conducted 1) additional interviews; 2) reviewed all the medical and hospital records; 3) discussed the patients with the clinical physicians; and 4) had objective tests such as neuropsychological exams and methacholine challenge performed. Then we analyzed all our information again. See Exhibit B for a summary of the scientific analysis.

37. A second method of investigating the cause of the disease is known as the "web of causation." The concept of "web of causation" is important in analyzing exposures to toxins.

38. In Dr. Freidman's, Primer On Epidemiology, there is a schematic drawing on the "web of causation" of myocardial infarction, heart attacks. This diagram has been attached as Exhibit C to this Declaration. In explaining a "web of causation" analysis it is important to consider that the development of a disease condition may be multi-factorial. In analyzing an incidence of toxic exposure an epidemiological investigation develops a similar "web of causation." The "web of causation" for toxic chemicals would consider some of the same factors as Exhibit C. In addition with toxic chemicals epidemiological studies also consider the chemicals at the site,

exposure to other chemicals, the work conditions, personal protective equipment, and other known factors associated with the toxins.

39. Epidemiology may use both qualitative and quantitative measures. In epidemiology quantities are measured and descriptive terms are used to describe the groups of persons.

40. In considering basic measures of epidemiology there are counts, proportions and rates, prevalence rates, incidence rates and other rates such as mortality rates, morbidity rates and case fatalities.

41. In considering the counts, proportions and rates of disease, the epidemiologist is addressing qualitatively and quanatively the differences between groups of people.

42. Prevalence is a measure of existing cases in a defined population at sometime. Prevalence = number of existing cases divided by size of the population.

43. Incidence is a measure of new cases that arise in a population during a defined time interval. Incidence rates = number of new cases divided by population at risk by time interval.

44. Epidemiologists attempt to estimate the increased risk that an exposure to a toxic substance in the environment posses to an individual. A useful measure for this increased risk is known as relative risk. Relative risk = risk in exposed subject divided by risk of unexposed subject.

45. Assessing the risk of a chemical is a complex process. Attached as Exhibit D to this Declaration is a schematic drawing from Hazardous Material Toxicology: Clinical Principles of Environment Health which identifies a risk assessment summary. This is put out by the U.S. EPA.

46. In working for the Health Department as an epidemiologist, I was involved in the identification and prevention of occupational diseases. The state had an interest in reducing the risk to Washington workers. Epidemiological studies are one method of identifying the potential risk.

47. As I mentioned above, it is frequently dangerous

with toxic chemicals to conduct experimental studies. In investigating the risk of toxic injury the scientific method frequently used was an observational study. However this does not mean an Epidemiologist ignores previously performed experimental studies. An epidemiologist may consider the result of experimental studies in designing and analyzing the results of an epidemiological study. In designing an observational study an epidemiologist may also consider information that has been identified in environmental surveillance's.

48. In an observational epidemiological study one is describing the occurrence of the disease population.

49. Descriptive studies usually involve the determination of incidence, prevalence and morbidity rates for disease in population groups according to basic group characteristics. Group characteristics may include age, sex, race, work environment, and exposure to chemicals. Descriptive studies are used frequently in the epidemiology of chemical exposures in humans.

50. There are also prevalence or cross sectional studies. Prevalence or cross sectional studies examine the relationship between disease and other characteristics or variables of interest as they exist in the defined population at one particular time. The principles of prevalence and cross sectional studies are applicable to the present case. There are variables noted between the exposures of the laborers versus the engineers. In comparing the laborers to the engineers there were differences in the severity of exposure to chemicals and concomitant differences in the prevalence of symptoms.

51. The work for the State Health Department often involves descriptive study. This is because descriptive epidemiological studies reveal the pattern of disease occurrences in human populations. A descriptive epidemiological study provides general observations concerning the relationship of the disease to basic characteristics. Basic characteristics include personal items such as age, sex, race, occupational, geographical location,

time of occurrence of disease, and clinical presentation. The areas of descriptive epidemiology may be summarized under the categories of person, place and time.

52. In the present case, it is important to consider the factors of occupation, time of occurrence of disease and place.

53. Place is a matter of great importance. Place provides obvious clues to the etiology of a disease and serves as a reference point for investigation.

54. In the context of the Health Department, follow-up investigation is important. The Health Department may be working with the attending physician in considering what further clinical testing needs to be done of a particular person.

55. In this case we conducted an epidemiological Health Hazard Evaluation. The treating physicians have conducted clinical evaluation of the individual patients. While questions of disease etiology may be answered by studying population groups, clinical problems often require study of groups of patients. For example the efficacy of treatment can only be defined by studying groups of patients.

56. In epidemiology, the physician is concerned about error rates in collecting information. Since epidemiological information is foundational to medical science, the reliability of data and conclusion is of paramount concern. As such there are specific methods utilized by standard epidemiological studies to control for errors.

57. In making observations or measuring there is some degree of error. Accepting the fact that there is the potential for error, epidemiologists take error factors into account in interpreting their data.

58. In epidemiology error effects two important aspects of data quality, that is validity and reliability. Validity or accuracy is a measure of how closely the observations correspond to the actual state of affairs. Reliability or reproducibility is a measure of how closely a series of observations of match similar events or conditions. These two areas of potential error are considered in gathering data

for Health Hazard Evaluation.

59. In the Health Hazard Investigation of the 1988 clean up we controlled for errors. The following activities were done to control for errors. Identical questions were asked of everyone. We went back and did a second questioning. Doing second interviews are an example of replication. Replication is one method of controlling for error. We referred the workers to clinical physicians to corroborate what was being said and what we observed. We had additional objective tests done such as neuropsychological testing and methecholine challenge testing. We used the basic differential diagnosis process to direct our investigation. As I outlined above we first looked for Legionella's and ruled that out. We look for the possibility of PCB poisoning and ruled that out. We then looked to the other agents present in the environment of the laborers and the engineers.

60. Exhibit E is another schematic from Hazardous Material Toxicology: Clinical Principles of Environmental Health addressing elements of an evaluation. This schematic identifies some of the variables associated with chemical exposure. The source of this also is from the U.S. EPA. An epidemiological investigation of a chemical exposure would take such variables into account.

61. When the exposure is to toxic chemicals, there needs to be an investigation of what chemicals were at the site, what the air sources were, what the sources of contamination were. Additionally, there may need to be information collected on the clinical symptoms including: having 1) blood work drawn, 2) respiratory assessments, 3)neurological assessments, 4) neuropsychological assessments and 5) other clinical assessments recommended by treating physicians.

62. After this information is collected, assessed and evaluated, then scientific analytical principles are applied to all the available information.

63. In an epidemiological investigation the epidemiologist may be involved in the initial investigation by collecting basic data. Then the follow-up clinical data

gathering is carried out by the treating physicians. In part this is done because follow up test may have risk associated with them. Further when a person is injured treatment is needed. A treating physician is in a better position to direct the care and interpret the responses to treatment. The epidemiologist takes the data collected by the treating physician and compiles it with the initially collected data.

C. **Epidemiological Investigation.**

64. A supervising engineer became ill the second day of the 1988 clean up. In the hospital he was tested for infections. It was reported he had Legionellosis. This is a reportable disease.

65. It was reported to the local health department and the Washington State Department of Health, Communicable Disease, Epidemiological Office. This is a condition that would normally promote a Health Hazard Evaluation.

66. In the normal course of these investigations a questionnaire is designed. Diane Nebel took that questionnaire and began questioning the workers. In questioning the workers she noted that the questionnaire was originally designed to ferret out evidence of a contagious disease such as Legionaries.

67. Ms. Nebel noted that there were significant reports of coughing and respiratory problems. She then appropriately contacted the State Health Department.

68. At that time Dr. Peter Houck from the CDC was working under me. I was supervising his work. Dr. Houck determined from laboratory tests that there was not an out break of Legionellosis among that population of workers. Dr. Houck and I discussed whether the out break of the illness had an occupational component.

69. There was a prevalence of these complaints among an identified group of workers who had some common variables. We began evaluating the common environment of the workers.

70. Those common variables included: that the workers were presenting with similar signs and symptoms; they had

worked in the same environment; they had worked with similar chemicals; and, they developed the same symptoms during a similar time.

71. When there was a hypothesis reached as to an occupational component to the symptoms, I became personally involved in gathering the information. As I pointed out before my work for the state was directed to surveillance of occupational diseases.

72. In January of 1989, Dr. Houck and I came to Spokane. We examined and questioned workers. We also conducted an on site inspection of the work area.

73. We then reviewed the medical and hospital records, laboratory tests, the clinical findings, the neuropsychological tests and the neurological test findings. From that information we identified an occupational component as an etiology of the worker's diseases.

74. As I previously mentioned, the results of our epidemiological investigation of the 1988 clean up were published in a peer review journal. This means that professional peers of Dr. Houck and I reviewed whether our article, "Organic Solvent Encephalopathy: An Old Hazard Revisited," was predicated upon a sound, scientific methodology.

75. My deposition has been taken on two occasions in regard to the investigation. I have provided all of the investigative information to defense counsel. I have discussed the individual items in the investigation. Additionally, I have personally and professionally reviewed all the data collected.

76. I am familiar with organic solvents. I am familiar with the known effects of organic solvents on humans. Over the years I have done mortality surveillance of workers exposed to organic solvents. Over the years I have done Health Hazard Evaluations of workers exposed to solvents, one of which has been published. This was discussed in my deposition.

77. Further over the years I have studied the Spokane workers at the Kaiser plants. In studies that have been

published, I have included information collected on the workers at the Mead Plant and the Trentwood Plant.

78. As to the Kaiser Plants in Spokane, my formal cohorts studies have been of the Mead works and not the Trentwood works.

79. I have also published for NIOSH the findings in my epidemiological studies at the Kaiser Plants in relationship to aluminum reduction. There are also respiratory sequelae to some exposures to the aluminum reduction process.

80. In conducting the investigation of the 1988 PCB clean up, we used the acceptable standard methods of epidemiological investigation, identical to the Health Hazard Evaluations done by NIOSH.

81. As I mentioned, the investigation was first begun by Ms. Nebel. Many of the variables that she was collecting information on were variables that would not only be applicable to an infection, but they would also be applicable to a toxic exposure.

82. Once I became involved in the investigation, we gathered additional data as to the chemicals at the worksite. The particulars about the worksite such as it being in a basement with air volumes at approximately 187 to 210 square meters, what the ventilation was and what personal protective gear was available and used. We also collected information as to what the vapors would have been from the chemicals in relationship to the weight of air. There was also information from the MSDS's of the chemicals used. In collecting information we considered what type of injuries would be expected to be associated with toxic exposures to these chemicals.

83. The injuries expected would be one of the variables of our investigation. Generally those variables were broken down into body systems, i.e., respiratory and neurological. We also collected information from the attending physicians on the clinical presentation of the patients. The factory officials provided us data on the workers' attendance.

84. We also considered the fact as to whether the

chemical exposures could be quantified reliably. Neither Kaiser Aluminum nor General Electric was taking air samples and we were not involved early on, we were not able to exactly quantify the exposure. However, we did review purchase records as to the amount of chemical that was purchased and used to clean up the site. That information was correlated with anecdotal reports from laborers as to who worked with the chemicals and their concomitant complaints.

85. We had additional investigative work performed in terms of laboratory investigations for pathogens and PCB's. There was also further clinical work done as far as respiratory system analysis and neuropsychological testing. The additional investigative work was by objective testing. The objective tests results correlated with the investigation observations. For example the neuropsychological testing confirmed the workers' memory complaints. See page 112 of Exhibit B.

86. With neurotoxic chemicals, one of the important measuring tools is that of neuropsychological testing. I understand that other witnesses in this case have provided the Court with extensive information as to standard neuropsychological testing in the face of neurotoxic exposures.

87. As part of our investigation we compared our data with that of previously published peer review studies. Our epidemiological investigation results were consistent with previously reported studies. A list of those studies is reflected in the attached Exhibit B.

88. Our investigation of the 1988 PCB was essentially a descriptive study. Our investigation also through analysis established that the most likely cause of the illness observed in the worker was exposure to solvents used in the clean up. Table 1 in Exhibit B identifies the prevalence of the symptoms in the exposed persons. See page 111 of Exhibit B. In reviewing Table 1 the validity of our study is borne out by the fact that the laborers, who had more exposure to the chemicals had a greater prevalence of symptoms. Further the

symptoms that were presented were the ones that one would expect to find when personal protective gear had not been used with exposures to these chemicals in a confined poorly ventilated space below ground.

89. I understand the defense may be confused about whether a cohort study should have been performed. A cohort study could not be done here. To do a cohort study, there needs to be 1) a single chemical involved and 2) a large group of persons exposed. A Health Hazard Evaluation as performed was the appropriate scientific approach to take in investigating this matter.

90. Given the reliable published literature on these chemicals, it was not scientifically necessary nor possible to do a cohort study. There has been extensive scientific study proving the individual chemicals cause the conditions documented in the workers at the 1988 clean up. The investigation was to identify, which of the workers were probably manifesting signs of toxic exposure to these chemicals. The investigation was published to remind the medical and industrial community that these injuries will occur if appropriate precautions are not taken.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED and signed this 2ND day of March, 1994 at Olympia, Washington.

/s/_____

Samuel Milham, Jr., M.D.

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FILED IN THE
U.S. DISTRICT COURT
EASTERN DISTRICT OF
WASHINGTON MAR 07 1994
JAMES R. LARSEN, CLERK
_____DEPUTY

The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTONAT SPOKANE

DAVID SCHUDEL, et. al., Plaintiffs, v. GENERAL ELECTRIC COMPANY, a foreign corporation; and KAISER ALUMINUM CORPORATION, a foreign corporation, Defendants.	NO. 92-CS-0081-FVS OFFER OF PROOF BY PLAINTIFFS RE: THE TESTIMONY OF PAULA A. LANTSBERGER, M.D.

The following Offer of Proof is submitted as to the witness PAULA A. LANTSBERGER, M.D.

DATED this 7TH day of March, 1994.

DAWSON & MEADE

/s/_____
Edward A. Dawson, WSBA #02911
Attorney for Plaintiff Carlson

PAULA A. LANTSBERGER, M.D., declares and states:

1. I am a physician licensed to practice medicine in Washington and Idaho.

2. Attached as Exhibit A is my Curriculum Vitae.

3. I have post-graduate work in Internal Medicine and Occupational Medicine. I practice in the area of Occupational Medicine.

4. As part of my routine practice, I am consulted by over a hundred employers on matters involving occupational health.

5. I am a physician who was consulted by Kaiser Aluminum and Chemical Company. I have done evaluation of workers for Kaiser here in Spokane.

6. At the request of the Spokane County Health Department I examined some of the workers involved in the 1988 PCB clean-up as an Occupational Physician.

7. I am a treating physician for Dan Skeman, Merlin Carlson, David Schudel, Timothy Schudel, Kathrene Froese, Craig Thompson, and Dan Glass.

8. I understand that extensive Offers of Proof have been prepared by other doctors involved in the investigation and evaluation of the workers in the 1988 PCB clean-up. My Offer of Proof will be less extensive since I assume the Court has been provided information on the basic science of toxic injuries.

9. I am familiar with the chemicals that were used in the 1988 clean-up. In my routine practice, I have evaluated individuals who have been exposed to the chemicals used in the 1988 clean-up.

B. <u>Occupational Medicine</u>:

10. My area of practice is Occupational Medicine. The majority of my practice involves the evaluation, treatment and care of persons in connection with their jobs. I have provided evaluation and consultation services for employers concerning the health issues of their employees. I have done pre-employment physical exams and screening of worker. I do periodic screenings of employees while they are employed. My practice also covers employees who are injured at work.

11. Employers often want pre-screening physical examinations and evaluations. Some of the reasons that employers want this information, are so that an employer can appropriately evaluate whether a person is physically capable of handling the work, or they need base line information as to the physical and mental condition of a prospective employee.

12. When a worker is injured at work, I am a physician who manages the diagnostic process and treatment regime.

13. An occupational medicine physician is often a

primary care physician. In the primary care role, an Occupational Physician often refers patients out for consultation and evaluation with other subspecialties.

14. As an Occupational Medicine physician I am familiar with the health implications of toxic materials.

15. I understand that defense counsel for Kaiser Aluminum and General Electric has suggested that the injuries that resulted from the exposure to chemicals in the 1988 PCB clean-up at the Kaiser Trentwood Plant, are undocumented events in the scientific literature. This is not true. The injuries sustained are the type scientifically expected when protective gear is not adequate or not used.

16. Over the last forty years, there has been extensive scientific research into the area of chemicals. Some of the major driving forces for the recent expansion and development of the scientific basis and the medical practice of treating toxic injuries have been addressed in the scientific literature. See attached Exhibit B[1]. Table 2.1, from Hazardous Materials Toxicology: Clinical Principals of Environmental Health, Edited by: John B. Sullivan, Jr., and Gary R. Kreiger, Williams & Wilkens, Baltimore, 1992, is just one example of information available.

17. For the Court's information, I will be referring extensively to Sullivan & Kreiger's Text in this Offer of Proof. I understand that this is a book that Plaintiff's counsel has purchased. It may make it easier for the Court to verify the information that I discuss in this Offer of Proof by referring to this text.

18. Along with many other materials, have studied this textbook and the information it imparts in detail.

19. In the practice of Occupational Medicine, I spend a considerable amount of my professional time keeping up with the current scientific literature in the area of Occupational Medicine and there related areas.

20. In Occupational Medicine, I work with a wide variety of subspecialties, including toxicologists, pulmonologists, nephrologists, internists, psychologists,

psychiatrists, neuropsychologists, industrial hygienists, neurologists, orthopedists, chiropractors, physical therapists, occupational therapists, surgeons and most of the other areas of health care specialties.

21. For purposes of this Offer of Proof, I will focus my attention on toxic insults.

22. It is routine for Occupational Medicine Physicians to assess the potential of adverse effects from chemicals in the occupational environment. It is also routine for the physician to recommend the appropriate protection and precaution measures. Occupational physicians have more knowledge of toxicology than an average physician. I do not have as much knowledge as a toxicologist. When I have reached the limits of my knowledge, I consult with a toxicologist. As an Occupational Medicine Physician, I am concerned with activities relating to the study of the potential chemicals or mixtures of them and the harmful affect it may have on workers. In my scientific reading and continuing education, I have an ongoing study of the interaction between chemicals and the human biological system.

23. I am familiar with the current scientific literature on the chemicals used in the 1988 clean up.

24. I am familiar with the health issues relating to protecting the workers from injuries from these chemicals. I am familiar with the health implications of what happens to workers biologically, when they have not been protected from the chemicals. I am familiar with the diagnostic modalities for potential injuries from these chemicals. I am familiar with the current treatment regimes available for injuries caused by the chemicals in the 1988 clean up.

25. This area of toxicology is basic. There is extensive literature in this area. I keep myself apprised of the literature. I utilize the literature in planning, treating and evaluating the treatment of persons who have been injured from toxic substances.

26. I approached the evaluation and treatment of the workers in the 1988 cleanup as I would any other patients. I

use the differential diagnostic process in evaluation and treatment. The differential diagnosis process is basic to all areas of medicine.

27. In differential diagnosis process, the following activities take place.

28. A history is obtained from the patient. With injuries to workers the history is sometimes supplemented with information from family members, co-workers or other persons at the job site. History may also be obtained from other health care providers. Pertinent medical records are reviewed for information, e.g., emergency room records, pre-employment exams, etc.

29. The history obtained directs the physical exam. There are some matters that are routinely checked in all physical exams. The patient's complaint directs how detailed the exam is of certain organ systems. After the history and physical exam are done, appropriate laboratory tests and complications with other specialists are obtained.

30. The materials from the history, the physical exam, laboratory tests and consultations are reviewed and analyzed by myself. From all this information I arrive at what is known as a differential diagnosis. A differential diagnosis is a list of potential diseases or illnesses. Further history examination, laboratory tests or medical consultation is done to rule in or rule out the conditions and illnesses on the list.

31. As further evaluation and treatment are implemented, the list of potential conditions or illnesses may be reduced or expanded depending on what information becomes available in the process.

32. The process that I described is now basic medicine is practiced by most competent physicians in the United States.

33. In particular with chemical injuries as an occupational medicine physician, I consider the adverse effects that may be detrimental either to survival or normal functioning of a patient.

34. In considering the adverse effects of chemicals, I consider the chemicals or the by-product and what tissues or

organ systems in the body they may potentially cause an injury to. For example, if a chemical is volatile and it can be breathed by inhalation, there are a variety of tissues and organ systems that may be impacted. The respiratory system may be effected. If the chemical crosses into the blood system it may effect the nervous system, the cardiovascular system, the renal system, the digestive system or just about every system in the body. There may be local chemical burn injuries to the respiratory system whether it be in the nose, mouth, or down into the lungs.

35. My history taking and physical exams are directed towards observing for signs of toxicity.

36. With chemicals there may be differences in the signs of toxicity depending upon the magnitude, duration and route of exposure.

37. In assessing the patient's history and physical exam, I am looking for a dose response relationship between exposure and symptoms. Such a dose response relationship is important in determining the causal relationship between chemicals and the toxic effects.

38. With the number of chemicals in the modern work place, it is impossible for any physician, including myself, to have detailed information about particular chemicals on the top of our head. I have a general understanding of most groups of chemicals. However, with most patients part of my evaluation includes looking at the scientific literature specifically related to the family of chemicals involved in the workers' environment.

39. In evaluating Dan Skeman, Merlin Carlson, David Schudel, Timothy Schudel, Kathrene Froese, Craig Thompson and Dan Glass I specifically looked at the scientific literature on the families of chemicals involved at the work site.

40. When toxic chemicals are involved, I, as an occupational medicine physician, may see a group of patients, who have a range of common symptoms and a range of common exposure. I may use the information from one patient to assess and evaluate what is occurring in other

patients. The information as to each patient is not compartmentalized in my evaluation.

41. Considering an entire group of workers with a toxic injury is a valuable medical assessment tool.

42. With neurotoxic chemicals this group consideration is invaluable. Often the most injured worker is unable to provide as detailed information as needed for a complete evaluation. The neurotoxic effects of the chemical interfere with the workers' ability to perceive, remember or report what happened. Workers that have had less of an effect from neurotoxic chemicals may be in a better position to observe and report what happened in the common environment of the workers.

43. In the 1988 clean-up, I had some valuable baseline information as to the functioning of the workers. For example, Dan Skeman has been examined about eight weeks before he began working on the clean-up. I had baseline information as to his mental functioning, his lungs, his skin, his nervous system, and his general health. Daniel Skeman's health was significantly altered after exposure to the chemicals. Mr. Skeman was a marker or control for evaluating the impact of his experience on the other workers. The information that I garnered from my pre and post evaluation of Daniel Skeman was utilized in my evaluation and treatment of the other workers.

44. Occupational Medicine Physicians are frequently involved in assessing the potential of adverse effects from chemicals in the occupational environment. Occupational physicians are involved in making recommendations as to the appropriateness of protective gear and precautionary measures. As such, I am familiar with Material Safety Data Sheets (MSDS's), the various protective gear, and the reasons for the protective gear, and precautions.

45. In this case, as a physician, information that I often have available with other worker's injuries was not completely available here. For example, there was no monitoring of the air. There was no individual medical monitoring of the

various workers for their dose exposure to the chemicals.

46. Since this information was not available, I had to go to additional means to extrapolate the relative exposure of the workers in relationship to the manifested signs and symptoms I observed and found.

47. The health hazard evaluations performed by Diane Nebel, Drs. Milham and Houck, were made available to me. Information from health hazard evaluations is used by Occupational Medicine Physicians. It is not unusual for an Occupational Medicine Physician to work with a Health Department investigation, or a Labor and Industries' Investigation of events at a work site.

48. I researched the scientific literature on the health implications of the chemicals that were present at the work site. The scientific literature that I had pulled and reviewed in connection with the 1988 clean-up was made available in my depositions.

49. I point out to the court that in connection with this litigation, I have been deposed for days as to my evaluation, investigation, diagnosis, and treatment of all of these workers. The depositions of Dan Skeman were the longest and in the most detailed. I am assumed that counsel did not go into the same detail with the other workers, because I would have just been repeating myself in the subsequent depositions.

50. In searching the scientific literature for the health implications for chemicals, one cannot always find a specific study on a specific chemical. As a scientist, you look to the literature as to the family of chemicals. The health implications of chemicals are often interchangeable in a family of chemicals.

51. I understand that the Defendants are asserting there is no recognized authoritative basic scientific literature on the health implications of the chemicals involved in the 1988 clean-up. This is not true. Attached to this Declaration are several chapters from the textbook Hazardous Materials, Toxicology. I believe this is the most expeditious manner to identify for the Court that the health implications of these

chemicals have been well research, extensively researched, and extensively published.

52. Attached as Exhibit B[2] is Chapter 64 from Hazardous Material Toxicology. This is a Chapter entitled Halogenated Solvents. The chemicals 1,1,1-trichloroethane and tetrachloroethene are halogenated solvents. This means they are organic solvents.

53. In evaluating the workers, certain chemical families are of particular concern. Two of the chemicals were 1,1,1-trichloroethane, (methylchloroform) and tetrachoroethane (PERC). Of further concern was a related chemical and trichloroethane, TCE. When certain other chemicals are also present and/or heat is present TCE can be produced in response to a chemical reaction. At the work site they were mixing chemicals. Chemical reactions would occur with the mixing of chemicals. Further TCE is expected impurity in most technical and commercial grades of halogenated solvents. See Exhibit B, Chapter 64, page 733.

54. Methylchloroform, PERC and TCE are halogenated solvents. All these chemicals are central nervous system depressants. They cause dose-related changes in mental function depending on the individual chemical and duration of exposure.

55. There is scientific information available on concentration to which workers can be exposed short term without suffering: 1) there is sufficient change in level of consciousness to produce increased incidents of accidental injury; 2) chronic or irreversible tissue damage; and 3) respiratory tract irritation. The technical name for this safety level is threshold limit value -- short term exposure limit, TLV-STEL.

56. The TLV-STEL ratio and other similar ratio are part of the basis for determining what precautions and protective gear is needed. These levels are contained on MSDS.

57. The history I obtained is all the workers had changes in their level of consciousness while exposed to the chemicals. There were at least two workers, who were reported to suffer

loss of consciousness. All the workers reported coughing and respiratory irritation. There were other symptoms of central nervous system decompensation noted in the histories, such as dizziness and blurred vision.

58. On the basis of the above more probably than not there were levels of halogenated solvents present in greater than minimal TLV-STEL amounts. As such it would be logical to expect a worker had suffered chronic or irreversible tissue damage.

59. With the above analysis in mind, I focused further history, physical exam, laboratory testing, referral to specialist and follow-up to rule in or out injury to the various target organs of halogenated solvents.

60. The above analysis also focused the supplemented scientific literature research I performed and considered.

61. The pathophysiology of halogenated solvents is well documented, i.e., see the attached chapters of one medical textbook. The diagnostic modalities for ruling in or out injury have been researched and validated. I utilized these methods in the patient work up.

62. In considering injuries I considered whether there were acute or chronic exposures. Based upon the histories, the amount of chemical used and the objective test, I believe on a more probably than not basis the workers of the 1988 clean up had repeat acute exposures to halogenated solvents. With the repeat exposures there was a chronicity for some of the patients.

63. Central nervous system depression results from exposure to high doses of halogenated solvents. The histories indicated the workers suffered from varying degrees of central nervous system depression. To the extent possible from the history, I correlated the degree of change in consciousness with the nature of the exposure. With halogenated solvents deaths result from respiratory depression. Depending on the degree of respiratory depression there is a corresponding hypoxia. There is a correlation between the degree and duration of hypoxia with brain damage.

64. Postmortem examination of persons, dying immediately from toxic exposure to halogenated solvents, show nonspecific findings. With trichloroethane there have been documented findings of petechial hemorrhages in brain and lung tissue. Petechial hemorrhages are very tiny. See Exhibit B, Chapter 64 at page 741. In individuals who have not succumb to death, a MRI or CT scan may not show the petechial hemorrhages. The hemorrhages would be too small for the neuroradiologist to scan. For this reason the state of the art objective testing is neuropsychological testing.

65. Neuropsychological testing was performed on the workers. Some of the workers manifested significant cognitive injuries, others did not. With this type of cerebral insult there may also be concomitant or separate personality changes as well. The workers were screened for personality changes.

66. Halogenated solvents also effect the other organs of the body. The halogenated solvents probably contributed to the respiratory system injuries manifested by the exposed workers.

67. Also attached is Chapter 67 on Inorganic Acids and Bases. There are constituents of inorganic acids and bases in the chemicals used at the 1988 clean up, Exhibit C. Also attached is Chapter 68 on Organic Acids and Bases, Exhibit D. There were organic acids and bases at the worksite.

68. In the 1988 clean up, Kaiser and General Electric were apparently mixing together chemicals. There is no record of the ratio of how they were mixing together the chemicals other than anecdotal. As far as I know there were no remaining remnants of the mixed together chemicals for evaluation. However, relying upon basic chemistry a physician can reasonably extrapolate that different chemicals were generated by mixing together the chemicals. It would be logical that as a result of the mixing together of these chemicals there would be organic and inorganic acids and bases released.

69. Exhibit E is Chapter 106 on Alkylbenzene Solvents

and Aromatic Compound. Naphalene is in this family of chemicals. Naphalene was present in the chemicals used in the 1988 clean up.

70. These chapters provided to the Court are from recognized medical authorities. The chapters are set up with an overview of the chemical characteristics of the family of chemicals. A physician uses this information to evaluate and consider what potentially my happen to a worker exposed to the chemical. This information is also used to analyze and consider what potentially might happened if there are several chemicals in the environment. The chapters provide information about other things such as the diagnosis, treatment and prognosis from the exposure to the chemicals. Where applicable, there is information provided as to impurities in the chemicals. There is information provided on dose effects, whether it be from inhalation, dermal or otherwise. There is also information on what happens to these chemicals in the body as far as metabolism and on the various organ systems. There is information presented as to what one expects to see as far a clinical presentation of a patient acutely exposed to these chemicals or chronically exposed to the chemicals. The chapters also provide extensive references to public scientific journals on the family of chemicals.

71. I applied the same type of analysis as to the chemicals of other related organic solvents, such as aromatic hydrocarbons.

72. As Exhibit E indicates, there are similar health implications to this group of organic solvents as those of halogenated solvents. See table 106.1 at page 1088 in Exhibit E. The table summarizes the effects of solvent exposure. Also note a summary of the health implications and diagnostic measures. See pages 1099 to 1102 of Exhibit E.

73. The constellation of the workers signs and symptoms were consistent with the scientifically documented manifestations of solvent inducted injuries.

74. The textbook I referred to was not published at the

time that I was initially evaluating the workers in the 1988 clean up. However, many of the articles cited to in the chapters were available. This would cover information that I gathered myself as well as had in my general library through years of acquiring information on chemicals.

75. In evaluating the workers I determined which, if any, specialist needed to be consulted for each patient. A patient's individual symptoms direct how consultation and testing is performed. There were some tests ordered and performed at the request of Dr. Samuel Milham. These were in connection with the Health Hazard Evaluation.

76. I also had discussions with Dr. Milham and Dr. Houck as to additional screening of the workers. Additional screening included having neuropsychological testing performed as well as methacholine challenge testing. With individual patient I have determined whether it was clinically appropriate to do this additional screening. As a physician I do not want to be wasting money on unnecessary testing.

77. The changes in Mr. Dan Skeman's mental capacity after the exposure to the chemicals, was profound and impressive. What Mr. Skeman manifested would be what one would expect from a significant acute exposure to neurotoxic chemicals such as the one at the work site. Mr. Skeman's changes in his mental capacity helped me assess the validity of the other workers' reports of memory problems and personality changes. The other workers manifested symptoms similar to Dan Skeman, but at a lesser degree.

78. In occupational medicine when there has been a toxic insult and there is a question of injury to the central or peripheral nervous system, it is state of the art to utilize neuropsychological testing.

79. Unlike a medical doctor, a neuropsychologist has specific in-depth training, education and experience in evaluating the impact on the brain of toxic insults.

80. With chemicals such as the ones in the 1988 clean up, the damage may be microscopic. With microscopic damage it is not always possible to see that there is an injury

with a MRI, CT scan or other such test. The damage to the brain is assessed the neuropsychological testing.

81. Neuropsychological testing has developed over the years. The tests are just as objective as an MRI or CT scan. They are just administered in a different way.

82. With the chemicals involved in this case, the mental impacts may be divided into several areas. The impact may be of cognitive functioning or behavioral functioning, or personality changes. There may also be a component of peripheral injury.

83. A significant amount of the literature that I reviewed and considered in connection with evaluating and treating these workers was in the area of neurotoxic neurobehavioral implications. There are two chapters in Hazardous Material Toxicology specifically related to this area. There is an extensive body of scientific literature as to these types of injuries. There have been several books published on them. The neurobehavioral and neurotoxic implications of these chemicals are covered in many other toxicology textbooks and occupational medicine textbooks.

84. Attached as Exhibit F is Chapter 13 from Hazardous Materials and Toxicology. The chapter is entitled Neurobehavior Toxicology.

85. Neurotoxic chemicals produce distinct forms of injury. Neurotoxic chemicals result in injuries that are either: 1) acute confusional state, characterized by rapid evolving deficits in arousal and attention; or 2) dementia, a persistent disorder of cognitive and emotional functioning; or 3) combination of both. See Exhibit F, page 154.

86. Attached as Exhibit G is Chapter 12 on Neurotoxicology from Hazardous Material Toxicology.

87. One of the significant presentations of all of these workers was the impact on their respiratory system. A significant majority of the workers had persistent coughs many months after the exposure. The respiratory problems of the workers have ranged in severity. I believe the range in severity is related to how much of the chemical they were

exposed to in the confined space and whether or not they had personal protective gear available. In the group of patients I saw a relationship between the degree of exposure and the severity of associated pulmonary and neurological problems.

88. In Hazardous Material Toxicology there is a wide variety of information available on pulmonary injuries. Chapter 38 addressed acute pulmonary injuries from hazardous material. There was information in that chapter that was helpful to me in evaluating individuals. However, I was not a physician actively involved in the acute phase of evaluation and treatment of these workers. Other doctors were involved in the acute phase of treatment and evaluation of these workers.

89. In reference to the acute injury there is one caveat. Since these workers were not provided information about these chemicals, I believe they were at a handicap in providing that information to the initial treating physicians. As such many of the initial treating physicians who were not occupational medicine physicians, probably did not think to ask about chemical exposure. I am placing no fault on these physicians, it is just a matter of specialty. If one does not work in the area of occupational medicine, one is not necessarily sensitive to all of the information that needs to be gathered in a history and evaluated as far as work injuries. Had I seen all these individuals on an acute basis, I would have been evaluating them for the acute respiratory response to toxic exposures to these chemicals.

90. My evaluation and treatment of the workers was in the role of the residual effects of the pulmonary injuries.

91. Based on the foregoing comments, I think it is appropriate to point out the Chapter 11 on Pulmonary Toxicology from Hazardous Materials and Toxicology. This chapter provides extensive information as to pulmonary implications of exposures to chemicals. It covers materials such as presenting signs and symptoms. The chemicals that are expected to effect the respiratory system. The manifestation of those effects. Suggestions as far as

diagnostic tests and suggestions as to how those tests are interpreted. See Exhibit H.

92. Based upon my evaluations, testing, consultations and research, I believe that the workers in the 1988 clean up have varying degrees of injury to their lungs. The condition they have is known as reactive airways disease.

93. In evaluating workers for occupational injuries to their lungs, I take into account their smoking history. Smoking is not an unusual habit to find in blue collar workers.

94. In evaluating the workers in my differential diagnosis list, I considered other causes of the signs and symptoms the workers were presenting. I performed tests to rule out those other causes. Tests were performed to rule out infectious process, heavy metals and other diseases or illnesses.

95. After diagnosis was reached with each individual patient, I made appropriate referrals for rehabilitation. The rehabilitation may have been, depending on the patient, the providing of medical treatment for their respiratory problems, cognitive rehab for their brain damage and psychological counseling for the personal problems associated with the injury.

96. Many of the workers presented with complaints of joint pain. With those patients appropriate medical treatment was instituted for alleviate the joint pain.

97. Many of the workers had problems with reaction to chemicals and this was analyzed. This was analyzed in terms of straight physical responses, and also in terms of psychological implications. In this area there was also the implications in changes in their cognitive functioning.

98. Medical science has recognized that there is psychological sequela following toxic insults. This area has been researched. There are various modalities for evaluating and treating individuals for the psychological sequelae resulting from a toxic exposure.

99. Chapter 42 in Hazardous Material Toxicology is entitled Psychological Sequela of Chemical and Hazardous Material Exposure. In the these workers there were varying

degrees of psychological sequela following this exposure. The psychological sequela, depending upon the patient, was as a result of undergoing this experience and then having concomitant changes in their mental and biological functioning. See Exhibit I.

100. I applied a logical scientific process with each individual patient. I considered the patient's presentation as a group and individually. This would be an appropriate approach in occupational medicine.

101. My evaluations and reasoning process has been explored extensively in days of deposition.

102. The following is a summary of the individual workers.

103. Dan Skeman, I believe, was most profoundly injured of all the workers. From history and investigation, it appears that he had one of the greater exposures. He had a lost of consciousness. Merlin Carlson also lost consciousness. His changes in his personality and function were collaborate with objective tests. Those objective tests included neuropsychological evaluations by numerous neuropsychologists. Respiratory problems, dermal problems, and behavioral problems. More probably than not Dan Skeman's change in his pulmonary function, neuropsychological function, personality problems, joint problems, skin problems, and respiratory problems was caused by the chemical exposure in the 1988 clean up. Had he had appropriate protective gear, he probably would not have been injured.

104. Merlin Carlson was examined extensively by me. I am one of his treating physicians. I have followed him through rehabilitative treatment and maintenance care for several years.

105. Merlin Carlson has objective documentation of changes in his neuropsychological functioning, cognitive functioning, behavioral functioning. He has objective demonstrations of changes in his pulmonary system. He has reactive airway disease. He has chronic problems with joint

pain, fatigue, rashes and changes in his ability to consume things, such as food. The above conditions and illnesses have been documented and evaluated by appropriately recognized medical means.

106. Merlin Carlson was more probably than not injured by the failure to have adequate respiratory and skin protection while he was working with the chemicals.

107. Tim Schudel was examined extensively by me. I am one of his treating physicians. I have followed him through rehabilitative treatment and maintenance care for several years.

108. Tim Schudel has reported the following as a result of his exposure to toxic solvents at Kaiser in 1988: cough, rash, and memory problems. He has also reported irritability, sleep problems, and mood swings. He has reported a tightening and squeezing sensation in his chest and increasing cough, lung problems and multiple upper respiratory infections. He has reactive airways disease syndrome. He has extreme anxiety concerning his physical health and a fear of exposure to chemicals. These complaints by Tim Schudel are consistent with exposure to toxic chemicals.

109. Tim Schudel was exposed to toxic solvents during the clean up at Kaiser in 1988; he was not provided with adequate respiratory protection, wearing only paper face masks and respirators provided by Kaiser and General Electric.

110. Tim Schudel had a pre-existing history of smoking. I took that into account in my evaluation of his exposure to toxic substances. It is fairly common that blue collar workers would smoke. A person who smoked would be susceptible to injury to the chemicals present at the 1988 clean up. Taking all of Tim Schudel's health history into account more probably than not his pre-existing health conditions were exacerbated by the unprotected exposure to the chemicals at the 1988 clean up.

111. I understand Tim Schudel has been seen by pulmonalogists. A pulmonalogists would be involved in

evaluating how the different structures of the respiratory system are effected by smoking and these chemicals.

112. Craig Thompson was examined extensively by me. I am one of his treating physicians. I have followed him through rehabilitative treatment and maintenance care for several years.

113. Craig Thompson was exposed to toxic solvents at the Kaiser clean up in 1988. I initially treated him for complaints of a cough, headaches, and memory loss. He reported that he had a "high" sensation while working at Kaiser. He also has reactive airways disease syndrome. Persons with reactive airways disease syndrome have an increased susceptibility to having more problems with upper respiratory infections, and have a more difficult time than others in clearing them because of the reactivity of their lungs. As with most of the other patients involved in this incident, he had aches and pains in his hands and legs. He has a general fear of being around anything regarded as a chemical. He has problems with organization and sequencing things to get coordinated. He has repeated infections and repeated problems with his lungs. He has shortness of breath, and a persistent cough.

114. Mr. Thompson was exposed to such toxic solvents during the Kaiser clean up in 1988. Like the other workers, he had only minimal protection, consisting of paper face masks and paper body suits.

115. Craig Thompson had pre-existing health habits which could cause problems with his lungs and liver. The scientific literature I previously identified for the Court indicates the chemicals at the 1988 clean up are metabolized out of the human body by various organs. Two of the organs involved in metabolizing these chemicals are the lungs and liver. Unhealthy lungs and liver would effect the bodies ability to metabolize and process these chemicals. I discussed the status of Craig Thompson's pre-existing health conditions in my deposition.

116. Craig Thompson's pre-existing alcohol use makes it

difficult to assess the impact of neurotoxic chemicals on the brain. A person with a significant alcohol use history is more susceptible to neurological impact from neurotoxic chemicals. I referred Mr. Thompson to Dr. Paul Domitor for evaluation of these conditions.

117. Craig Thompson's pre-existing health conditions were more probably than not aggravated by his exposure to the chemicals used in the 1988 clean up.

118. Deborah Guaragna Williams was examined by me. I am one of her treating physicians.

119. Debbie Guaragna Williams had a pre-existing history of smoking. I took that into account in evaluating her. Debbie Guaragna Williams had a history of upper respiratory infections. I also understand Debbie Guaragna Williams has been extensively evaluated by Dr. Morton at the Oregon Health Science Center.

120. Debbie Guaragna Williams has been followed more extensively in Western Washington and Oregon. On the diagnosis of her present condition, I would defer to the doctors who are her primary care physicians.

121. Deborah Guaragna Williams has a history of repeated upper airway infection and upper respiratory infections. She has a history of ear infections since the exposure. She has also complained of headaches. Irritation to her mucus membranes during the exposure and resulting reactive airways disease syndrome make persons so affected more susceptible to infections and irritation. Ms. Guaragna Williams also suffers from shortness of breath and hypersensitivity to odors. Her activity level is significantly reduced. She is easily fatigued.

122. Ms. Guaragna Williams was also exposed to toxic solvents at the Kaiser plant without adequate protection, i.e., she also had only paper face masks and suits.

123. Kathrene Froese came to me with problems of breathing and sensitivity to odors. She also complained of headaches and a cough. She also had a rash while working at Kaiser. She has an increased susceptibility to respiratory

infections because of her exposure at Kaiser. She also has had problems with joint and bone aches and pains.

124. Kathrene Froese's problems are consistent with toxic poisoning. She was exposed to chemical solvents given inadequate protection, i.e., paper face masks and body suits only. She was exposed to these chemicals while working at the Kaiser plant in 1988.

125. I took into account Ms. Froese's pre-existing smoking history and intellectual ability. As I mentioned above and below, there are implications associated with smoking and lowered intellectual ability when a person is exposed to these chemicals. There are also implications as far as sorting out the test results. Kathrene Froese's pre-existing condition was more probably than not aggravated by her exposure to the chemicals.

126. Dan Glass was examined extensively by me. I am one of his treating physicians. I have followed him through rehabilitative treatment and maintenance care for several years. 127. Dan Glass came to me for heart palpitations, memory loss, and a rash. He also complained of irritability and depression.

128. Such symptoms are consistent with toxic poisoning. Mr. Glass was exposed to toxic solvents while working at the Kaiser Aluminum plant in 1988; he was provided only with a paper suit for protection.

129. I took Dan Glass's pre-existing health and intellectual condition into account in evaluating him. Dan Glass through the years was in special education programs. He has a relatively low intellectual capacity. This is not atypical in blue collar workers who are performing jobs such as Dan Glass did. A pre-existing low intellectual ability makes it difficult to evaluate a person's neuropsychologically because their scores are so low. A person with a pre-existing low I.Q. has more to loose than someone with average or higher I.Q. More probably than not the exposure to the chemicals aggravated Dan Glass's pre-existing condition, including his limited intellectual ability.

130. David Schudel was examined extensively by me. I am one of his treating physicians. I have followed him through rehabilitative treatment and maintenance care for several years.

131. David Schudel came to me for a persistent cough and memory problems. He later stated that cleaners, solvents, and other fumes caused him breathing problems. He also had a rash following his chemical exposure to Kaiser. He has also developed a baseline obstruction of the small and large airways. He also has a fear and aversion to chemicals or anything that can be regarded as a chemical. The exposure at Kaiser was the inciting incident for his subsequent development of the fear of chemicals. He has also complained of depression. It is necessary for his to use an air purification device in his house. He has adult on-set asthma and also bone and joint aching.

132. David Schudel has a history of smoking. As I mentioned with the previous workers, the fact that a blue collar worker smokes is not atypical. The pathophysiological dynamics that I previous mentioned with the other workers would be applicable to David Schudel.

133. I took Mr. David Schudel's pre-existing smoking history into account in evaluating him. More probably than not the exposure to the chemicals aggravated the pre-existing status of his lungs.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED and signed this 7 day of March, 1994 in Spokane, Washington.

/s/_____

Paula Lantsberger, M.D.

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Attorneys for Plaintiff Merlin Carlson

The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON ATSPOKANE

DAVID SCHUDEL, et al., Plaintiffs'	)	
vs.	)	NO. CS-92-0081-FVS
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	DECLARATION OF MARCIA M. MEADE ON DR. BEATY

I, Marcia M. Meade, certify that:

1. Attached to this declaration is the true and correct original of Dr. E. Thatcher Beaty's Offer of Proof with attached exhibits.

2. I declare under penalty of perjury under the laws of the State of Washington the foregoing is true and correct.

DATED this 17th day of January, 1994 in Spokane, Washington.

_/s/_____
Marcia M. Meade WSBA No. 11122
Attorney for Plaintiff Carlson

OFFER OF PROOF
Edward Thatcher Beaty, Ph.D.

1. I have read the Joint Motion *in limine* prepared by James B. King and Joe G. Hollingsworth requesting that the

court exclude my expert testimony on the grounds that I should not be able to testify regarding medical causation and that the methods I used in reaching my opinion do no meet the requirements of scientific validation as required by the *Daubert Decision*. Their assertions are based upon outdated and misleading information, and I disagree with both of them. This offer of proof is my response to their motion.

2. I am a Clinical Neuropsychologist. I am licensed to practice in the State Washington. In addition to a Ph.D. in Clinical Psychology, I have completed a post-doctoral fellowship in Clinical Neuropsychology. I have been engaged in the practice Clinical Psychology for 21 years, and the practice of Neuropsychology for nearly 9 years. I have taught neuropsychology at the undergraduate, graduate, and post-graduate level. Attached as exhibit A to this Offer of Proof is a copy of my current Curriculum Vitae. My education, training and experience meet the Guidelines for Training in Neuropsychology established by the International; Neuropsychological Society and Division 40 (Clinical Neuropsychology) of the American Psychological Association.

3. In my career as a Clinical Neuropsychologist, I have been frequently and actively involved in the diagnosis and treatment of patients suffering from a wide variety of emotional and brain disorders, to include associated with exposure to neurotoxins. I make an effort to study and remain abreast of the published scientific literature in my field of expertise.

4. Mr. King and Mr. Hollingsworth argue that my testimony should be inadmissible because of a lack of qualification to offer an opinion regarding "medical causation." My response to this assertion is as follows:

5. In my current practice, I am regularly requested by Federal and State agencies, to include the Social Security Disability Division, the Department of Labor and Industries, the Department of Vocational Rehabilitation, and the Crime Victim's Compensation Section to examine patients and offer

opinions with regard to the presence or absence of impaired brain functioning, the most probable causes for any impairments which are identified, and the prognosis for treatment, recovery and rehabilitation. Earlier in my career, I provided similar opinions for the Department of Defense and the Veteran's Administration. On a regular basis, I receive referrals from and consult with physicians, case managers, and other health care professionals to assist them in answering similar questions with regard to neurobehavioral impairments, etiology, prognosis, treatment recommendations and case management issues.

6. A well trained and experienced neuropsychologist is fully qualified to aid the court in understanding similar issues with regard to the current neurobehavioral status of an individual, the most likely causes for any impairments which are identified, treatment considerations, long term effects, and the relationship of other psychological and social factors which have a bearing on the case. A neuropsychologist is specifically trained to study and determine cause – effect relationships between brain disease, trauma, or other injury, and the subsequent neurobehavioral difficulties and individual may experience.

7. The methodology and basis for coming to a neuropsychological opinion is solidly grounded in the methods of science. The methodology has been empirically tested and statistically validated, subjected to peer review, and published in scientific journals and other publications.

8. A comprehensive neuropsychological evaluation typically involves the following methods and procedures:

a. Review of documents and records pertinent to the particular case, to include medical, educational, and vocational information, if available.

b. a clinical interview with the patient, and interviews with or collateral information from relatives or other persons familiar with patient, if possible.

c. Administration of a variety of neuropsychological tests which are relevant to the issues in questions. These

tests are administered in a standardized manner. The tests have been empirically, scientifically validated to be sensitive to different neurobehavioral impairments have been subjected to rigorous peer review, and published in scientific journals and other publications.

d. Close observation of the patient over the course of an extended period of evaluation. This includes observations in highly structured testing situation, and also in less structured, "real world" situations, if possible.

e. Quantitative evaluation of the test results according to published, empirically validated normative data adjusted to the patient's sex, age, IQ, and level of education, if possible.

f. Integration of the test results with qualitative observations, the relevant scientific literature, and the clinical knowledge and experience of the neuropsychologist to formulate an opinion and conclusions, and to prepare ad written report. The evaluation typically addresses the issues of current status of neurobehavioral functioning, etiology, and prognosis mentioned above.

9. The methodology outlined above is generally accepted in the medical and relevant scientific community.

10. I am not a medical doctor, and I do not presume to offer a medical doctor's opinion with regard to the issues in this case. I am a well trained and experienced neuropsychologist, and am fully qualified to offer and opinion with regard to both current brain functions, "neuropsychological causality", and prognosis. These are integral parts of my role as a neuropsychologist, and would be of benefit to the court in understanding and determining the facts in the current case.

11. The issue of admissibility of neuropsychological testimony in general, and specifically with regard to the issue of causation, has been tested in a number of higher courts in a variety of jurisdictions. To my knowledge, most decisions have ruled that a neuropsychologist can testify with regard to both issues. See Exhibit B, **Neuropsychologists as Expert Witnesses: Issues of Admissibility,** by R.E. Richardson and

K.M. Adams, published in 1992. This article indicates the many of the decisions cited by Mr. King and Mr. Hollingsworth in support of their motion have been superseded by more recent decisions.

12. A second objection raised by Mr. King and Mr. Hollingsworth is that the opinions regarding the relationship between the neurotoxic chemicals at issue in this case, in the levels of exposure given, are not reached via reasoning which is tested, published, and generally accepted. My response to this objection is as follows:

13. There is a large volume of empirical research which documents that exposure to many of the chemical solvents in the present case can cause brain and nervous system injuries. A solid review of this research is in the text by David Hartman, **Neuropsychological Toxicology**, published in 1988. The research indicates that the neuropsychological effects of many different organic solvents on humans are similar, though they may differ in the potential severity of their harmful effects with a give level of exposure.

14. Mr. King and Mr. Hollingsworth argue that encephalopathy may result from exposure to a solvent when it is severe, acute, or a very high level, and is associated with an accompanying loss of consciousness. This is a misrepresentation of the current scientific knowledge in this field, and is potentially misleading to the court.

15. Scientific research is a continually evolving process. There is no fixed or "absolute truth" in the neuropsychology of toxic chemical exposure, but rather a continuing search for greater understanding of the effects of such exposure, and of the variables associated with the development of neurobehavioral injuries. Recent scientific research, based upon well accepted and sound scientific methodology, indicates that an acute exposure to high levels of solvents, without necessarily producing a loss of consciousness, is sufficient to produce lasting neurobehavioral impairments. Representative examples of this research were included in my deposition with regard to Merlin Carlson as exhibits 2 and 3.

These comparatively brief research articles are presented as exhibits C and D in my current Offer of Proof. I will review them in brief detail.

16. Exhibit C is **Alterations in Cognitive and Psychological Functioning after Organic Solvent Exposure**, authored by Lisa Morrow, Ph.D., et al., and published in the *Journal of Occupational Medicine*, Vol. 32, No. 5, May 1992. This is a well respected, peer reviewed scientific journal.

a. In this study, 32 workers with a history of exposure to mixtures of organic solvents were matched with 32 blue collar workers matched forage and education, with no history of such exposure. For the exposed workers, the duration of exposure ranged from 1 month to 19 years.

b. Both groups were administered a battery of neuropsychological tests which had been previously tested and validated as being sensitive to the effects of neurotoxic solvent exposure. The exposed workers were screened for possible malingering.

c. Comparison of the two groups by standard statistical analyses revealed that both groups were comparable on measures of general intelligence. However, statistically significant differences were found between the groups on essentially all other cognitive domains which were evaluated. The solvent exposed group performed significantly more poorly on measures of learning and memory, visuo-spatial abilities, attention and mental flexibility, and psychomotor speed. The solvent exposed workers also reported clinically significant levels of emotional distress, to include depression, anxiety, somatic concern, and disturbances in thinking.

d. Closer examination of several variables indicated that duration of exposure was positively associated with the presence of emotional distress in the exposed workers, but neither recency nor duration of exposure was significantly associated with the presence of emotional distress in the exposed workers, but neither recency nor duration of exposure was significantly associated with the presence of

cognitive impairments. However, of particular interest in the current case, the researchers found that "peak exposure", defined as a "sudden and brief exposure to a larger than normal amount of solvent", and "cacosmia" (a disorder in which a patient experiences discomfort in the presence of certain odors), were each associated with neurobehavioral impairments.

17. Exhibit D. is **Risk Factors Associated with Persistence of Neuropsychological Deficits in persons with Organic Solvent Exposure**, by Lisa Morrow, et. al., published in the *Journal of Nervous and Mental Disease*, Vol. 179, No. 9, 1991. This is another well established and well accepted scientific journal.

a. In this study, 27 male and female workers with a documented history of organic solvent exposure were evaluated with a validated, standardized test battery on two separate occasions (average test-retest interval: 16 months). Their duration of exposure ranged from 1 day to 15 years. Fifty-five percent of the workers had a history of "peak exposure", which was defined in 16.d. above.

b. Statistical analysis of the test results indicated no initial differences between groups with regard to neuropsychological differences. All patients had cognitive and personality changes consistent with toxic solvent encephalopathy. Test-retest comparisons indicated that 48 percent of the workers improved between the two evaluations, while 52 percent either demonstrated no change, or experienced a decline over time.

c. Further statistical analysis assessed the relationship between follow-up status (improvement vs. no improvement/decline) and several exposure-related and subjective variables (age, length of exposure, history of peak exposure, interval from exposure to first test, and worker's appraisal of their cognitive improvement). Only peak exposure was statistically related to the outcome of no change/decline at follow-up.

18. In the current case, one of the plaintiffs, Daniel Glass, has testified to the effect that he found Mr. Carlson unconscious in the workplace, allegedly overcome by the fumes from the chemicals with which he was working. This certainly meets the definition of "peak exposure" cited above.

19. I have examined four of the workers involved in this case. They were all referred to me by their physician, Paula Lantsberger, M.D. In my examination, I used the scientifically validated an accepted methodology of clinical neuropsychology described above. To my knowledge, this is the best methodology available to assist the court in determining the facts and understanding what happened to these men as a result of their work related exposures to mixtures of solvents.

20. My findings indicate that two of the men, Merlin Carlson and Daniel Skeman, have developed significant, persistent neurobehavioral impairments, more probably than not due to their work-related solvent exposures. I discussed my findings in detail in the deposition pertaining my evaluations of these men.

21. There is extensive literature on the validity of neuropsychologic evaluations. There has been extensive research validating the testing modalities used in neuropsychology. For the Court's information I have attached as Exhibit E to this Offer of Proof the first chapter of Dr. David E. Hartman's book on Neuropsychological Toxicology: Identification and Assessment of Human Neurotoxic Syndromes. This chapter gives a general summary of neurotoxicology and the history as well as identification of the areas which are addressed in neurospsychology. Further, the chapter also discusses the advantage of neuropsychological assessment in evaluating the effects of a toxic exposure.

22. Attached as Exhibit F to this Offer of Proof is the second chapter of Dr. David E. Hartman's book. This is a general overview of evaluating neurotoxic syndromes.

23. In Dr. Hartman's Chapter No. 2, there are a variety of methods for neuropsychological evaluation reviewed.

These methods have been scientifically validated. The important aspect is that the neuropsychologist tailor the evaluation to the individual patient. In tailoring the individual evaluation the neuropsychologist takes into account the personal history and the facts at hand with regard to individual patients.

24. Attached as Exhibit G to this Offer of Proof is copy of my neuropsycholgical evaluation report of Merlin Carlson. A review of my report demonstrates that I used recognized valid neuropsychological testing methods. Further, it indicates that I followed the methods described in the scientific literature for evaluating patients with solvent exposure.

25. If my testimony is allowed to be admissible, I will do my best to clearly communicate to the court my opinions with regard to the men I have evaluated, the scientific basis of my methodology and conclusions, and how my findings are supported by recent research which has been peer reviewed and published in scientific journals. I will present my testimony in a conservative and objective manner, and will confine my testimony to the limits of my expertise.

26. I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED this 17th day of January, 1994 in Spokane, Washington.

/S/Edward Thatcher Beaty, Ph.D.

Edward A. Dawson
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Attorneys for Plaintiff Merlin Carlson

The Honorable Fred Van Sickle

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON ATSPOKANE

DAVID SCHUDEL, et al., Plaintiffs'	)	
vs.	)	NO. CS-92-0081-FVS
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	OFFER OF PROOF LLOYD CRIPE, PH.D.

Lloyd I. Cripe, Ph.D, states under penalty of perjury of the laws of the State of Washington as follows:

1. I am neuropsychologist. Attached as Exhibit A to this Offer of Proof is my Curriculum Vitae.

2. I have reviewed Dr. Beaty's Offer of Proof.

3. I am familiar with Dr. Beaty. In fact, Dr. Beaty has studied under me.

4. I am in agreement with Dr. Beaty's description of the methodology of neuropsychology. I am also in agreement with Dr. Beaty in his description of the scientific methodology applied to analyzing the etiology of brain impairment in individuals who have been exposed to solvents. I am also in agreement with Dr. Beaty in his analysis of the methodology applied to identifying the etiology of Merlin Carlson's brain impairment.

5. I have read the Joint Motion in Limine written by James B. King and Joe G. Hollingsworth requesting that the

court exclude my expert testimony. Plaintiff's counsel has pointed out the law of the Daubert Decision to me. I understand that Defense counsel is seeking to exclude my testimony on the grounds that I should not be able to testify regarding medical causation and that the methods I used do not meet the requirements of scientific validation as required by the Daubert Decision. I disagree with both of these assertions and this offer of Proof is my response to their motion.

6. I am a clinical neuropsychologist. I am licensed to practice in the State of Washington. I am a board certified diplomate in clinical neuropsychology by the American Board of Professional Psychology and the American Board of Clinical Neuropsychology. Attached as Exhibit A to this Offer of Proof is my current Curriculum Vitae. I mention that I am board certified because board certification ensures that I have been examined by a group of my peers and they have judged that I am appropriately trained, competent and qualified in this specialty. See Exhibit B, Definition of Clinical Neuropsychologist published by Division 40, the Division of Clinical Neuropsychology of the American Psychological Association.

7. In my career as a Clinical Neuropsychologist, I have been actively involved in the diagnosis, treatment, and rehabilitation of many patients suffering from all types of neuropathologies. I have worked on a daily basis with the gamut of medical specialists to include neurologists, neurosurgeons, and psychiatrists. I have regularly conducted comprehensive neuropsychological evaluations and have treated persons with brain diseases and trauma to include disorders due to neurotoxins. Additionally, I have been and continue to be an educator of professionals in the specialty of Clinical Neuropsychology. I routinely function as a consultant to colleagues reviewing their cases and lending diagnostic opinions.

8. It will be helpful for the court to basically understand what a clinical neuropsychologist is and how they go about

doing their clinical work.

9. In general, psychology is the scientific study of behavior and mind. Clinical psychology encompasses both the scientific study of abnormalities of mind and behavior and the clinical application of that knowledge to the diagnosis and treatment of mental disorders due to psychiatric and other medical conditions. Clinical neuropsychology is a subspecialty of clinical psychology. Clinical neuropsychology encompasses both the scientific study of how the mind and behavior are related to the brain system and the clinical application of that knowledge to the diagnosis and treatment of problems of behavior and mind due to neuropathologies. Psychologists have a long and strong tradition of using scientific methodology in their research and clinical practice. Doctoral level training in psychology is heavily oriented toward learning and practicing scientific thinking and methods. Typically, Ph.D training in psychology places a much stronger emphasis upon scientific research methodology and how to carry it out than does training in medicine. The model of training in clinical and applied psychology is in fact called "the science practitioner model."

10. Clinical Neuropsychologists evaluate patients experiencing changes of mind and behavior due to neurologic diseases and trauma. Patients are referred to Clinical Neuropsychologists from a variety of sources but are most often referred from medical specialists (e.g. Neurologists, Neurosurgeons, and Psychiatrists; etc.). These referrals include: defining the neurobehavior effects of brain conditions, differential diagnosis, defining the practical implications of neurobehavioral impairments and the monitoring of changes in mental functioning over the course of time. There are 5 basic questions addressed by Clinical Neuropsychologists when evaluating any case: (1) Is there the presence of brain dysfunction? This can be called the discrimination question. (2) If there is brain dysfunction, where in the brain system is it? This is the localization question. (3) What specific brain functions are involved?

This is the function question. (4) What is the etiology? This is the causation question addressing what is the most probable cause of the brain dysfunction. (5) What will be the effect of the brain dysfunction upon the person's real world functioning? This is the practical implications question.

11. Clinical Neuropsychologists routinely answer questions of causation (Etiology) in their clinical practice. It is fundamental to their work. Medical doctors rely upon neuropsychological opinions of causation as a part of their clinical practice.

12. Clinical Neuropsychologists practice independently and are recognized by medical specialists as an independent profession. Clinical Neuropsychologists work in a variety of settings. Many work in major medical centers as allied medical specialists. Some work in university settings usually connected to medical schools. A number work in private practice. The United States government employs Neuropsychologists in various agencies including: all the branches of the military, the Veteran's Administration, Public Health and other agencies. If necessary, I can provide the court with a variety of documents regarding the education, training, and credentialing of neuropsychologists and their methodology.

13. The comprehensive neuropsychological evaluation usually consists of the following processes and procedures: a) Review of documents relevant to a particular case (medical, educational, etc.); b) a clinical interview of the patient and interviews of persons familiar with the patient; c) the administration of various standardized neuropsychological tests; d) direct observations of the patient over the course of the evaluation; e) a statistical normative analysis of the test results comparing the patient's test performance to scientifically validated norms; f) clinical analysis of the tests and other observations comparing the findings with the Neuropsychologists clinical knowledge and experience; and g) finally formulating the information and conclusions into a formal written report. The evaluation addresses all of the

fundamental questions previously discussed. In most cases, the amount of direct time with the patient is about 8 hours with the analysis and report writing requiring another 4 or 5 hours. By way of comparison, the neurologic mental status examination which uses a more subjective method to screen neurobehavioral status, is typically conducted in about 5 minutes!

14. It is my opinion that a well trained and experienced clinical neuropsychologist is best qualified to aid the courts in understanding the neurobehavioral condition of a person and the most probable causes of any brain impairment they may be experiencing. By both training and experience clinical neuropsychologists are experts in studying and determining the cause-and-effect relationships of brain disease/trauma and brain impairment.

15. Mr. King and Mr. Hollingsworth argue that my testimony should be inadmissible because of a lack of qualification to give an opinion regarding "medical causation." While I am not a medical doctor and cannot give a medical doctor opinion, I am a well qualified, fully credentialed clinical neuropsychologist who does and can give a doctor's opinion regarding "neuropsychological causation." This is an essential part of my role as a clinical neuropsychologist. It would be a misrepresentation of my profession as well as a limitation to the courts to not recognize and respect my role as a clinical neuropsychologist.

16. I would like to also point out to the court that this issue of admissibility of the neuropsychologist to generally testify as an expert and specifically to testify regarding the issue of causation has been tested in a number of higher courts in various states. In all the cases that I am aware of, the courts have ruled that the neuropsychologist is a qualified expert and in most cases can testify regarding causation. See Exhibit C, Neuropsychologists as Expert Witnesses: Issue of Admissibility by Robert E. L. Richardson and Russell L. Adams.

17. Additionally, it should be noted that

Neuropsychologists, including myself, have testified as qualified experts in Washington courts over the years regarding causation in both state and federal proceedings.

18. The second issue raised by Mr. King and Mr. Hollingsworth is whether or not there is sufficient scientific evidence regarding the toxic substances in this case and the duration of exposure to merit damage causing significant brain damage. I will now address this issue.

19. It is well known in both neurology and clinical neuropsychology that organic solvents can have adverse effects upon the nervous system. This knowledge is based upon both clinical experience and scientific studies. A perusal of any major text in neurology, such as Clinical Neurology by Baker and Baker looking at the section on chemical exposures or neurotoxins will demonstrate this fact. Such a search will also reveal that the effects of the organic solvents are very similar. In neuropsychology references, like Neuropsychological Toxicology by David E. Hartman, there are reviews of research regarding solvents. The reviews indicate potential harmful effects from these substances.

20. Although the last chapter has not been written on this matter, the published scientific research regarding organic solvents and their short and long-time neuropsychological effects is substantial and growing. See Exhibit D which is a list of references from my files and attached articles. Most of these articles have been subjected to peer review and deemed to represent adequate scientific merit for publication in reputable professional journals. It is my opinion that an open-minded objective review of these articles would lead a reasonable thinking person to conclude that while not all questions regarding these substances have been answered, there is sufficient scientific evidence to conclude that the substances involved in this case can have damaging effects upon the nervous system.

21. It is important for the court to know that in the clinical world scientific investigation is always in a state of development. There are few topics in medical and

psychological research that have been investigated to a point of exhaustion or absolute certainty. This is true in many areas and particularly true in the area of the effects of toxins upon the human organism. The question is not whether complete investigation or exhaustion of a subject matter has occurred, but rather, "What is the basis of the current knowledge?" Is that current knowledge, even though not complete, based upon common clinical experience, solid reasoning (a hallmark of scientific methodology) and a sound scientific methodological process? It is my opinion that the substances in question in this case are in fact known by medical and psychological professionals to be potentially harmful to the human system. The knowledge is based on scientific methods and clinical practice. It is known that solvents are potentially damaging to humans and can cause nervous system damage with resulting changes in neurobehavioral functioning and adaption.

22. It seems that Mr. King and Mr. Hollingsworth are asking for a hyper-idealistic standard of scientific proof that rarely exists in the work-a-day real world of clinical practice or clinical science. It is this type of interpretation that causes proponents of tobacco use and their attorneys to argue in courts throughout the country, that there is inadequate scientific proof that tobacco can cause damage to the human organism? This type of reasoning would probably argue that the courts should not see radioactive exposure as the cause of human impairments because there has not been a definitive epidemiologic study unequivocally demonstrating its effects. This type of reasoning and standard expected exceeds common sense and the realities of the clinical scientific community.

23. Mr. King and Mr. Hollingsworth also argue that if the substances in question caused damage, then all the persons involved in the clean up should be equally damaged. They argue that there would not be individual sensitivities to the exposure.

24. This argument does not consider or appreciate

common clinical knowledge and experience. Although there were various persons working on the clean up job, there was probably a great deal of difference in exactly 1) where they worked, 2) how confined they were or 3) how much of the substances they were exposed to as well as the concentrations. It is not safe to assume that the exposure was equivalent for all persons. Further if there are not any differential sensitivities by individuals to these substances, it will be a very rare phenomenon. There are hardly any substances known to mankind that do not have differential effects in different individuals. This is especially true of toxic substances. Certainly, clinical experience commonly reveals significant differences in reactions to chemical substances.

25. I have examined four of the litigants in this case using the clinical scientific neuropsychological methodology discussed above. To my knowledge there is currently no better methodology available to the courts to best understand the realities of what has happened to these persons as a result of their exposures. My investigations revealed that two of the persons, Mr. Skeman and Mr. Carlson, demonstrate significant neurobehavioral impairments more probably than not cause by their exposures. These men have experienced a significant alteration of their normal adaption. It is my opinion that all concerned and especially the court, should be provided with all of the facts possible to make the best possible decision regarding these cases.

26. I had an opportunity to review Dr. Beaty's testing of Merlin Carlson before I tested him. I reviewed medical information and school information. I also took a history, interviewed Mr. Carlson, and administered my own tests.

27. The impairments Merlin Carlson manifest are those expected with solvent exposure. Before his exposure in 1988 to solvents, Merlin Carlson did not have a history of the impairments he manifested at Dr. Beaty's testing.

28. Attached as Exhibit D is my report as to Merlin Carlson. It contains my opinions as to his impairments.

29. Merlin Carlson's constellation of symptoms and test

results are consistent with injury from exposure to solvent mixtures.

30. There is scientific literature in peer review journals and texts that associate certain impairments with injury from solvents such as perchloroethylene, 1,1,1 trichloroethane, napathelane, aromatic hydrocarbons, aliphatic alcohols and the other chemicals to which Merlin Carlson was exposed.

31. Dr. David K. Parkinson, M.D., published a study in 1990 as to solvent exposure in a sample of 567 female blue collar workers. Parkinson, D.K., et. al. "Health effects of long-term solvent exposure among women in blue-collar occupations, American Journal of Industrial Medicine, 17:661-675 (1990) 567 women were divided into five groups: 1) never exposed, 2) exposed prior to and not during the past year, 3) exposed prior to but not currently, 4) currently exposed less than 50% of the time, and 5) currently exposed more than 50% of the time. The study found that heightened exposure related to depression, severe headaches, lightheadedness, room spinning, appetite difficulties, funny taste in the mouth, weakness, fatigue, rashes and abdominal pains.

32. In Dr. Parkinson's articles he analyzed his findings in connection with other reported studies. Dr. Parkinson's studies were consistent with previous Scandinavian studies. In reviewing studies, one considers what other scientific research is referred to by the author. In considering the other scientific sources, one looks for consistencies in the results.

33. As I understand the defendants did not measure the levels of the chemicals in the air at the time that the workers were exposed. It is my understanding that no level of exposure was not monitored or measured by the companies therefore a deductive approach was used to analyze what probably happened to these persons with exposure. I have considered the chemicals on site; the symptoms and complaints manifested at the time of exposure; the relative quantities; the lack of respiratory and skin protection; and the relative duration of exposure. The above factors are the

typical factors considered by neuropsychologists when OSHA data is not available on air levels or on site biological testing of the workers.

34. In analyzing the scientific literature in connection with Merlin Carlson's medical presentation, the literature should be viewed in terms of chronic exposure rather than a single acute event. One basis of this opinion is that Merlin Carlson was working with these chemicals over a series of weeks rather than just one individual day.

36. As to the chemical 1,1,1 trichchlorethane (methylchloroform) there are published studies documenting impairments. In 1977, Gamberal published a study reporting significant decrements of performance at exposures of 350 parts per million (PPM) for perceptual searching tasks and at 450 ppm's for simple and choice reaction time, manual dexterity, and perceptual speed tasks. Gamberale, F. Methylchloroform exposure. II. Psychopysiological functions, Work Environment and Health, 10:82-92 (1973).

36. Dr. Stollery tested a group of 9 solvent exposed female workers. The workers were exposed to solvents. See Stollery, B.T., Memory sequela of solvent intoxication", J. Work Environment, Health, 14:45-48 (1988).

37. Dr. Stroller tested the memories of the 8 workers exposed by accident to solvents. The results of Dr. Stroller's tests showed that with these isolated chemicals, the workers showed normal patterns of performance on tests of learning and short term and long term memory, but they had marked difficulties when attention had to be allocated between two resource-competing tasks. Dr. Stroller did follow-up testing on these workers. The results of the follow-up tests indicated that the solvent intoxication led to lasting adverse neuropsychological sequelae. Dr. Stroller's follow-up tests were eight months after the initial testing.

38. As a neurpsychologist I take information such as above into account in correlating a patient's history to symptoms and test results. For example, with persons such as Merlin Carlson Dan Skeman, David Schudel and Tim

Schudel, from the history I presume they had different exposures. The differences in the impairments shown in neuropsychologic testing may be an indication of different levels of exposure. The differences may also be an indication of individual sensitivity to the chemicals.

39. In Baker, E.L. The neurotoxicity of industrial solvents: A review of the literature, American Journal of Industrial Medicine, 8:207-217 (1985). Baker discusses a review of the absorption of organic solvents. Specifically, there is an analysis of absorption of 1,1,1 trichloroethane and tetrachloroethylene. I understand from looking it up that tetrachloroethylene is another name for perchloroethylene.

40. In Dr. Baker's study, there is a review of the scientific literature on the neurological effects of exposures to solvents. The scientific literature shows that there is a difference between low level exposure and nervous system impairments and high levels of exposure.

41. Dr. Baker in his study points out:

> The accumulated evidence supports the occurrence of a syndrome of toxic encephalopathy caused by excessive exposure to organic solvents in trades such as painting and boat building. This syndrome is characterized by memory disturbances, impaired psychomotor function, impaired verbal abilities, and disturbances of mood. The onset of such behavioral complaints occurs during periods of excessive exposure to solvents and persists after exposure has ceased. A nonspecific manifestation of early solvent toxicity has been referred to as "the neurasthenic syndrome," which manifests primarily as fatigability, irritability, depression, and episodes of anxiety. Although obviously caused by many other etiologies, this constellation of symptoms

> occurs pronounced disruptions of neurobehavioral function [Swedish Work Environment Fund, 1981]. Follow-up studies of patients with solvent-induced toxic encephalopathy have shown persistence of functional impairment years after removal from solvent exposure.

See Id. page 213.

42. Correlating this scientific data with Merlin Carlson, I make the following scientific observations.

43. From the history given, Merlin Carlson was exposed to high levels of solvents. I understand that there were gallons of cleaning products solvents used during this cleanup. The solvents were at times being used in an aerosol manner with spraying. As aerosols and sprays the chemicals would be easier to inhale. These solvents are also known to produce vapors. These solvents are known to be neurotoxic. Merlin Carlson was working in a confined space. He was working below ground level in small rooms. At the time, Merlin Carlson manifested signs and symptoms of neurotoxicity. The above Baker studies referred to such workers as painters and boat builders. Some painters have jobs where they work in confined spaces, such as paint cubicles. Boat builders at time work in the confined spaces of boat interiors. There is a reasonable analogy to Merlin Carlson's working conditions in the 1988 PCB cleanup.

44. Additionally, Merlin Carlson's constellation of symptoms correlate with symptoms repeatedly documented in the scientific literature. The existence of this constellation of symptoms is a tell tale sign of the injury occurring from solvent exposure.

45. As mentioned previously, Neuropsychologists on a regular basis, sort out the etiology of an impairment. I have considered and analyzed Merlin Carlson's solvent-exposure history. The presentation of Merlin Carlson constellation of impairments is most consistent with a solvent exposure in October and November 1988. Merlin Carlson pre-exposure

history does not indicate he had the impairments documented by Dr. Beaty and myself.

46. Neuropsychologists are frequently functioning in a forensic manner when workers are injured. As such the profession addresses this area. Being a health care provider, a Clinical Neuropsychologist has an obligation to participate in Court proceedings if subpoenaed by any party. Attached to this Affidavit is an article from the Journal of Cognitive Rehabilitation, which is Exhibit E to this Affidavit. This article covers some of the issues that the Court is perhaps considering as to whether there is scientific evidence to support the opinions that I have formed as to the workers in the 1988 PCB cleanup. I point out to the Court that the chemicals perchloroethylene and trichloroethylene are addressed in this article at page 7. There are references to the scientific research which supports the opinions.

47. Exhibit E shows that Merlin Carlson's constellation of symptoms correlate with those reported in the scientific literature.

48. Exhibit E at page 7 notes:

> Following the acute symptoms of solvent exposure, many painters developed an organic brain syndrome characterized by intellectual and emotional symptoms resembling dementia, leading to social decline. Aircraft factory workers who handle solvent-containing jet fuels have reported fatigue, apathy, dizziness, chest tightness, sleep disturbances, and impairment in memory, perceptual speed, and mental arithmetic. (Eskenzi & Maizlish, 1988)

49. As to the exposure to perchloroethylene in Exhibit E at page 7 Dr. Miller points out:

> Exposures of four hours on four consecutive days to low dose of PCE was sufficient to produce visual, psychomotor, and nerve conduction deficits in volunteer subjects in a recent study by Altmann, Wiegand, Bottger,

Elstermeier and Winneke (1992).

50. Merlin Carlson was exposed for as much as ten hours a day over several weeks to perchloroethylene along with other known neurotoxins.

51. The use of neurotoxic chemicals in the work place is to some extent an old issue. Impairments associated with neurotoxicity have been documented in the scientific literature for hundreds of years. However, in modern times the magnitude of the problem has escalated with the increased use of chemicals in the work place. At present there is active research and study into this phenomena going on throughout the world. The European countries, such as Sweden, Denmark and England, are many years ahead of the United States in studying and controlling these chemicals. Many of the Federal and State governmental regulations as to these chemicals have come out of the scientific studies. Responsible industry and governments have an interest in protecting the workers. It is from the study of the problems produced by these chemicals that recommendations are made for the use of protective equipment.

52. I have studied in detail the various articles by Dr. Lisa Morrow. I discussed Dr. Morrow's studies in deposition. See Morrow, Risk Factors Associated with Persistence of Neurosychological Deficits in Persons with Organic Solvent Exposure, The Journal of Nervous and Mental Disease, Vol. 179, No. 9, pp. 540-545; Morrow, Alterations in Cognitive and Psychological Functioning After Organic Solvent Exposure, et. al., Journal of Occupational Medicine, Vol. 32, No. 5, May 1990, pp. 444-450; Morrow, A Distinct Pattern of Personality Distrubance Following Exposure to Mixtures of Organic Solvents, Journal of Occupational Medicine, Vol. 31, No. 9, September 1989, pp. 743-746. I have correlated the research of Dr. Morrow's findings with the workers in this litigation. The MMPI's of the workers in the 1988 PCB cleanup correlate with the MMPI's described in Dr. Morrow's report on solvent exposed workers. Merlin Carlson's did not complete the MMPI due to his limited reading ability and

acquired brain impairment. Even without completing the MMPI Merlin Carlson manifested symptoms and problems consistent with the MMPI profiles of person's exposed to solvents.

53. In the workers exposed to the solvents in 1988 PCB cleanup, there were frequent complaints of dizziness. Dizziness is a known symptom to hydrocarbons. In 1989 Dr. Hodgson studied vestibular problems associated with short term exposure to hydrocarbons and demonstrated this relationship between exposure and dizziness. See Hodgson, Encephalopathy & Vestibulopath Following short Term Hydrocarbon Exposure, Journal of Occupational Medicine, Volume 31, No. 1, January 1989, pp. 51-54.

54. It is my understanding that organic solvents are hydrocarbons. In Dr. Hodgson's study three workers went into a large container without respiratory protection. The container had waste oil stored in it. I understand that aromatic hydrocarbons are associated with waste oil. In a very short time, i.e. ten minutes for one worker, they became confused and had to be taken to the emergency room. Three months later the workers were seen by Occupational Medicine Physicians. Neuropsychological testing was undertaken. Neuropsychological evaluations were consistent with other solvent exposed workers.

55. The three men had vestibular dysfunctions. One of the men's vestibular dysfunction continued beyond 18 months. Neuropsychological testing of the men showed patterns of dysfunction. The exposed workers were age-matched to a control group. It was noted the test results showed that the exposed men had measurable dysfunction in sensitive visuospatial functioning and immediate delayed and visual reproduction tests. As the complexity of a design increased, there were corresponding tendencies for the drawings to become more distorted. These findings suggest that the men were unable to process a great deal of visual information rapidly. One of the patients was significantly slower in mental flexibility from the controlled group. This study documents

mild encephalopathy and vestibular dysfunctions following short term hydrocarbon exposure.

56. Correlating this and other studies with the workers in 1988 PCB cleanup, there is significant correlation. As I understand 1,1,1 trichloroethane, perchloroethylene and other chemicals were involved, and they are known as aromatic hydrocarbons or chlorinated hydrocarbons. The workers in the above study were in a confined space and the workers in the 1988 PCB cleanup were in an essentially confined space. Complaints of dizziness after exposure to this family of chemicals are a frequently noted symptom. The deficits noticed on neuropsychological testing are similar to other studies. It is important to note that the men described in Dr. Hodgson's, Encephalopathy & Vestibulopath Following short Term Hydrocarbon Exposure, Journal of Occupational Medicine, Volume 31, No. 1, January 1989, pp. 51-54 were exposed for less than a day. The workers in the 1988 PCB cleanup were exposed to days and weeks to multiple solvents.

57. It is my opinion, on a more probable than not basis, that the etiology of Merlin Carlson's neuropsychological and affective impairments is the exposure to the solvent mixtures including the aromatic hydrocarbons, the chlorinated hydrocarbons, the 1,1,1 tricholorethane, the perchloroethylene, and the aliphalic alcohols.

58. The opinions as I have expressed above and in depositions are well documented in the scientific literature. More specific opinions as to which chemical caused which part of the damages cannot be addressed since I understand that General Electric and Kaiser Aluminum did not obtain air samples. As to what Merlin Carlson and the other workers who were exposed, as a neuropsychologist, I can make an empirical analysis of the exposure. This is based on the descriptions of the exposure and the scientific literature as to the exposures. In the scientific literature identified for the Court, frequently there is no description of the exact amounts of the exposure to the workers. In this case there is information available on the names of the chemicals, the

general amount of the chemical at the site, the days of potential exposure to the chemical, the level of physical exertion and the presence or lack of protective gear. There are also studies available from the government, including OSHA standards and NIOSH standards as to what level you expect to see changes in level of consciousness such as euphoria, lethargy, loss of consciousness and death. There is also observations from other workers. Further, there is data available from the health department. From this data I can scientifically conclude that Merlin Carlson was exposed to a significant amount of neurotoxic solvents.

59. From my understanding, Merlin Carlson was exposed to these chemicals for many weeks while working nine to ten hour shifts. The days were for the most part consecutive except for a few times when he had one day off or one period where he had nine days off. This nine day period was because Merlin Carlson had become too ill to work. Further, my testing of Merlin Carlson was consistent and correlated with the testing of other workers at the site.

60. I performed a detailed analysis on Merlin Carlson's test results in light of the research published in the peer reviewed literature. I also analyzed the test results of Dr. Beaty in light of the research published in the literature. In addition to the above my multiple depositions in this litigation illustrate that I utilized a well recognized clinical scientific approach in my professional evaluation of Merlin Carlson and the other three persons studied. The fact that I found two of the four exposed persons more probably than not brain impaired and two of them not, should lend credibility to the fact that I approached the study of these persons in an objective scientific manner.

61. I am committed to objectively communicating to the courts my clinical opinion in these cases.

62. I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

DATED this _____ day of January, 1994, at Seattle, Washington.

___/s/Lloyd I. Cripe, Ph.D

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Attorneys for Plaintiffs

THE HONORABLE ALAN A. MC DONALD

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON AT SPOKANE

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON, JR.; TIMOTHY SCHUDEL; SANDRA SCHUDEL, husband and wife, and the marital community composed thereof; KATHRENE RAE HOWELL; CRAIG A. THOMPSON; DEBBIE GUARGANA WILLIAMS; JOHN HOPKINS; RUTH HOPKINS; husband and wife, and the marital community composed thereof, Plaintiffs vs. GENERAL ELECTRIC COMPANY, a foreign corporation; KAISER ALUMINUM CHEMICAL CORPORATION, a foreign corporation, Defendants.	)	No.CS-92-00081-AAM DECLARATION OF DANIEL M. GOLDSTEIN, M.D. ON *SCHUDEL* INQUIRY

I, Daniel M. Goldstein, do state and declare that under penalty of perjury and under the law of Missouri the foregoing is true and correct:

1. I am a physician with a specialty in toxicology.
2. Attached to this declaration is a copy of my

curriculum vitae. See Exhibit A.

3. I have previously testified in depositions and in trial in this case. I have also provided the court with numerous declarations. See Exhibits B, C.

4. I understand that in the published decision of *Schudel v. General Elec. Co.*, 120 F.3d 991, 997 (9th Cir. 1997) the court said about my opinions:

> Dr. Goldstein's testimony suffered from similar deficiencies. Dr. Goldstein conceded that only five organic solvents, none of which were involved in this case, had been proven to neurotoxic. He also testified that it would be improper to infer conclusions as to the toxicity of TCA and Perc based on the toxicity of the other solvents, and that repeat exposure to nonpersistent toxins such as organic solvents over long periods must be documented to establish a causal relationship.
>
> Dr. Goldstein acknowledged that the biochemical mechanism of neurotoxicity from TCA and Perc ha snot been demonstrated. Only two studies cited by Dr. Goldstein involved TCA and Perc, and neither met *Daubert* standards. The Altman study found no relationship between exposure to Perc and the toxic encephalophathy or loss of consciousness alleged by the plaintiffs. The Kalifant study involved long-term (7-15
>
> years), repetitive exposures to TCA at high levels."

5. The Ninth Circuit Court of Appeals has apparently been mislead on my opinions and has taken my opinions out of context. The above quote in *Schudel* does not encompass the opinions that I expressed pre-trial, in trial and now. I have requested counsel to prove to this Court a copy of my testimony that shows the *Schudel* opinion to be wrong as to myself.

6. Pre-trial and in trial I presented to the court extensive references to scientific literature that is contrary to the *Schudel* Court's perception of my testimony. I have asked

that counsel point out my previous Offers of Proof. Further that counsel provide the court with the extensive list of peer-reviewed scientific references that were identified for the court. In trial, I believe I had in the courtroom two volumes of peer-reviewed scientific articles covering reports on Organic Solvents including Trichloroethane (herein TCA) and Perchloroethylene (herein PERC). In trial I specifically discussed many of these peer-reviewed scientific articles, which address the known neurological injuries associated with exposure to the specific organic solvents present at the 1988 PCB clean-up at the Kaiser Trentwood plant.

7. *Schudel* reference to my opinions completely overlooked my testimony that there were other organic solvents present at the 1988 PCB Kaiser Trentwood clean-up. The other organic solvents present are known and have been scientifically shown to cause neurological injuries. The above quote from *Schudel* completely overlooked or ignored the multiple scientific articles that I cited and discussed in the pre-trial and in trial proceedings. I identified and discussed those organic solvents and the relevant scientific literature pre-trial and in trial.

8. Pre-trial and in trial, I addressed how before I even knew of this litigation, I had incorporated in my own personal reference library Dr. Samuel Milham, Jr.'s article on his investigation of the 1988 PCB clean-up at the Kaiser Trentwood plant. *Organic Solvent Encephalopathy: An Old Hazard Revisited* "American Journal of Industrial Medicine", Vol. 22 pp. 109-115 (1992). This article certainly is peer-reviewed scientific proof that TCA and PERC in repeated exposure at levels above the permissible exposure limits do cause toxic encephalopathy.

9. It is not true that I only pointed out two articles to the court to support my opinions on TCA and PERC causing neurotoxic injuries. Pre-trial I directed the Court to multiple pertinent chapters in one of many peer-reviewed medical textbook entitled Hazardous Materials: Clinical Principles of Environment Health, ed. by John B. Sullivan, Williams and

Wilkins, Baltimore (1992). The chapter 64 Halogenated Solvents addressed most of the areas that I understand to be part and parcel of a legally competent medical opinion. This chapter alone had 94 peer-reviewed references. Additionally, I identified and discussed other articles for the court's purposes. Pre-trial and in trial I specifically identified the scientific research that established that TCA and PERC do cause and known to cause neurotoxic injuries. The court was provided with several applicable chapters from Dr. Sullivan's textbook as part of my pre-trial Offer of Proof. Those book chapters not only contained specific known scientific information about TCA, Perc and the other organic solvents present at the PCB clean-up, but they also referenced scores, if not hundreds of peer-reviewed scientific articles.

10. I also refer the Court to Solvent Neurotoxicity, by Peter Arlien-Søborg, CRC press (1992). This is a recognized peer-reviewed text on solvents. The attached chapters 12 and 14 address that TCA and other solvents have been proven to produce neurotoxic injuries. I point out Dr. Arlien-Søborg's textbook is far more recent than Herbert Schaumberg's textbook of 25 years ago. Science has learned and established extensive data on neurotoxic injuries in 25 years. Many of the individual articles that I have individually identified are those cited in Dr. Arlien-Søborg's textbook.

11. I have asked counsel to provide this court with copies of the peer-reviewed articles and chapters that I previously cited in my depositions, pre-trial offers of proof and during trial to support my opinions that TCA and PERC are neurotoxic. The published peer-reviewed scientific literature has long recognized that sub-acute repeat exposures to TCA and/or PERC can and do cause neurotoxic injuries. The court needs to consider that a person may over a period of days and weeks may receive a cumulative exposure to TCA and/or PERC that equals the levels of a single acute sub-lethal exposure of a brief exposure. In either situation, the methodology that the physician uses is identified in Table 12.6 of Sullivan's text and do those test and examinations that are

pertinent to a differential diagnosis considering a neurotoxic insult. See attached. The test includes neuropsychological testing. The methodology of obtaining a "Occupational Exposure History" and neuropsychological testing is so recognized and accepted that it is recognized in the World Health Organization Standards. See Chapter 106 of Hazardous Materials: Clinical Principles of Environment Health page 1101-1102.

12. From my review of the investigation and of the medical records Dr. Samuel Milham, Jr., Dr. Paula Lantsberger and other physicians followed the methodology that I identified above in collecting data on Merlin Carlson, Jr. and the other workers at the 1988 PCB clean-up. The medical data indicated the quality of the exposure; duration and intensity of the exposures were documented. Further, Dr. Milham and the treating physicians ruled out confounding factors and other disease.

13. I also understand that in reference to the alleged "similar deficiencies" in my opinions, I understand the Ninth Circuit Court of Appeals indicated as to Dr. William Morton, M.D., who also testified at trial *Schudel*, 996-97:

Dr. Morton's conclusions were based on extrapolation from studies that: (1) involved organic solvents other than TCA or Perc; and (2) examined long-term exposure at relatively low chemical concentrations or short-term exposure at very high concentrations, rather than the short-term, moderate-level exposure sustained by [Debbie] Williams. Dr. Morton did not establish it was scientifically acceptable to draw general conclusions about the neurotoxicity of TCA and Perc from studies of other chemicals; indeed, the testimony indicated small differences in molecular structures often have significant consequences.

14. I have reviewed Dr. Morton's affidavit in response to the court's questions about our opinions. I agree with Dr. Morton's reference to Casarett and Doull, Toxicology, The Basic Science of Poisons, Fourth Edition, 988-995 (1991). I have and do use Casarett's and Doull's textbook in its various

additions. Further, I agree with Dr. Morton's opinions expressed in his affidavit on risk assessment and extrapolation. I point out that independent of this litigation I am familiar with peer-reviewed scientific articles involving organic solvents that Dr. Morton has been an author and contributor. Dr. Morton's peer-reviewed articles on organic solvents are supportive of my opinions.

15. The method that I used to analyze and apply the scientific literature to the facts of this case are scientifically recognized. In addition to what I previously pointed out pre-trial, in trial and in reference to Casarett's textbook I refer to similar chapters in Hazardous Materials: Clinical Principles of Environment Health, see chapter 7. A copy has been attached as Exhibit D.

16. Chapter 7, Exhibit D, has a specific section on "extrapolation". See page 70 therein. Physicians and toxicology scientists recognize and utilize as an appropriate methodology extrapolation. As an example of its acceptance, the following is pointed out from Sullivan's textbook Chapter 7 page 70:

"The extrapolation process involves extending conclusions from what is known to exist in reproducible, experimental conditions to conditions that can be neither produced experimentally nor verified. Extrapolations in toxicologic risk assessment may be made from one species to another (laboratory animal to human), from a high dose region on a dose-response curve to a low dose region, from one route of exposure in test animals to another in human exposure, or from continuous, static exposure conditions in the laboratory to uneven, discontinuous human exposures."

17. Based upon the investigation in 1998 and 1989 the following chemicals were present at levels above the permissible exposure limit levels at the Kaiser Trentwood 1988 PCB clean-up: 1,1,1- Trichloroethane (TCA), Perchloroethylene (PERC), Xylene, Naphthalene, Trimethylbenzenee, 1,2,4- Trimethylbenzene, Ethylene glycol monobutyl ether, Cyclohexanol, Monoethanolamine, Sodium

Tripolyphosphate, Sodium Metasilicate Pentahydrate, Sodium Hydroxide, Surfactant Nonylphenoxypoly Ethyleneoxy, Mono and Dialkyl Acid Phosphate and Polychlorinated Biphenyls (PCB). These hazardous chemicals are each individually exceedingly dangerous for humans. This combination of Polychlorinated Biphenyls, Halogentaed Solvents and Aromatic Hydrocarbons posses a various serious risk on permanent injury or death to humans.

18. There is an extensive body of peer-reviewed scientific knowledge that many of the chemicals and hazardous materials present at the 1988 PCB clean-up are neurotoxic. See the attached Tables 12.2 and 12.3 from Sullivan's textbook.

19. There are known human physical manifestations of reactions to these chemicals at known parts per million levels. For example, see the table on Bates # 16004 from General Electric Company's own publication, Solvents and Safety. Another example of the recognition of the known human biological impact of TCA, PERC and other chlorinated (organic) solvents is shown in Table 12.4 of Sullivan's textbook. See the attached. See further Table 106.8 for PERC (Perchloroehylene) listed therein. There was proof that Merlin Carlson, Jr. and others lost consciousness during the use of PERC. Along with the other clinical manifestations, it is clear that the PERC levels were above 50ppm. I agree with Prof. Peter Brysee's opinion that the hazardous chemicals were at five to ten times the permissible exposure limit levels at the time that the Plaintiffs were doing the 1988 PCB clean-up at the Kaiser Trentwood plant. These workers also had high dermal contact with these hazardous chemicals.

20. When a scientist and physician is dealing with the effects of hazardous materials and chemicals there are inherent and pervasive ethical issues. One simply cannot use human beings to empirically test for injurious levels of hazardous chemicals such as TCA, PERC or any of the other hazardous chemicals at the 1988 PCB clean-up site, *i.e.* Nuremberg Conference Ethical Rules.

21. Stating that the "biochemical mechanism for neurotoxicity for TCA and PERC has not been demonstrated" does not address the question of causation. For example, for decades we as physicians and toxicologist know that "lead" causes neurotoxic injuries. Yet, we still do not know the biochemical mechanism for lead's neurotoxicity. Another example is for Trichloroethylene (TCE) the medical community knew and used TCE as a medical anesthetic, before it was decertified as one. However, we still do not know the "biochemical mechanism" for how TCE works as an anesthetic. See chapter 64 p. 732 of Sullivan's textbook.

22. In deposition defense counsel pointed out an "editorial" article by Herbert Schaumberg, M.D. I have previously filed an Offer of Proof where I identified specifically where defense counsel took my comments as to the specific Schaumberg "editorial" out of context. I may have conceded that Herbert Schaumberg decades ago thought that there were only five organic solvents proven to be neurotoxic, that does not mean that science has not proven that other organic solvents are neurotoxic. I point out that what Schaumberg may have believed to be true 25 years ago did not mean the same was true in 1994.

23. I previously identified for the court the condition known as Solvent Syndrome. This is a condition that is known to occur with the type of exposure that Merlin Carlson and the other workers had in the 1988 PCB clean-up. See the attached Table 106.9 from Sullivan's textbook. This is scientifically a well recognized syndrome. Citing the peer-reviewed article "Neurophysiological and psychological disorders and occupational exposure to organic solvents" by Grasso, P. Sharbratt, M., Davies, D. Food Chem Toxicol, Vol.22:819-852 (1984) Sullivan's textbook at 1103 states, "The 'solvent syndrome' became recognized at the end of the nineteenth century in workers who were chronically exposed to solvents in the workplace." The workers here had chronic sub-acute exposures over a defined time. The medical work ups demonstrate the 1988 PCB clean-up workers were

experiencing "solvent syndrome." The treating physicians ruled out other causes and confounding factors for the signs and symptoms of their respective solvent syndromes.

24. Pre-trial and in trial I identified extensive data on the known "pulmonary" dangers of the chemicals at the 1988 PCB clean-up. The chemicals hydrochloric acid, Sodium Hydroxide and Trimethylbenzenee are known and recognized to cause lung damage. Dr. Samuel Milham documented the details of the abnormal respiratory symptoms in the workers of the PCB clean up. The treating physicians did follow-up pulmonary function test. My testimony covered the variety of known and recognized lung damage caused by the three chemicals listed above. In the earlier trial Chapter 11 of Sullivan's textbook was identified. Medically and scientifically there just is no question that chemicals hydrochloric acid, Sodium Hydroxide and Trimethylbenzenee do injury human lungs, including in the circumstances of the 1988 PCB clean-up.

25. The opinion of the court in *Schudel v. General Electric* has taken my testimony out of context and also not considered 98 % of my reference to the well recognized peer-reviewed scientific and medical literature that supported my opinions. The circumstances of the 1988 PCB clean-up involved chemicals that were known to and did injury the workers of the clean-up.

SIGNED this 21 day of December 1998

/s/Daniel A. Goldstein, M.D.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al.,	)	
Plaintiffs	)	
	)	NO. CS-92-0081-AM
vs.	)	
GENERAL ELECTRIC	)	
COMPANY and KAISER	)	
ALUMINUM AND	)	AFFIDAVIT OF DR.
CHEMICAL	)	WILLIAM MORTON
CORPORATION,	)	
Defendants.	)	

Dr. William Morton, being first duly sworn upon oath, deposes and says:

1. I am a medical doctor specializing in environmental medicine. My vitae is attached hereto and by this reference incorporated herein as Exhibit 1.

2. I make this affidavit upon my own personal knowledge.

3. I was a treating doctor for Debbie Guaragna Williams, now known as Debbie Hayes. I have previously testified in this matter. I have provided an Offer of Proof which is incorporated herein as Exhibit 2. I testified at the trial. My trial testimony is incorporated herein as Exhibit 3.

4. I have reviewed the Ninth Circuit's opinion in this matter and understand that the Ninth Circuit has called into question my testimony on two major accounts. The first of these was that the Ninth Circuit believed I had not established that it was scientifically acceptable to draw general conclusions about the neurotoxicity of TCA and PERC from studies of other organic solvents, and secondly, the Ninth Circuit believed that I had not demonstrated that extrapolation was a scientifically acceptable methodology.

5. Extrapolation is a widely accepted scientific principle and methodology. Casarett and Doull, *Toxicology, The Basic Science of Poisons*, Fourth Edition, 988-995 (1991). portion of this standard text on toxicology is attached hereto as

Exhibit 4. As Casarett and Doull point out at 990, mathematical models (e.g., extrapolation) are commonly used by scientists, particularly scientists in the area of public health protection, to determine the potential adverse health affects of various chemicals (such as organic solvents) in society. Casarett and Doull point out that a variety of models are used by scientists. The appropriate method to be used is determined by the facts and what is known about the chemicals. The extrapolation method that I used, took into account that we know that: 1) low- dose, long-term exposure causes injuries; and, 2) high-dose, very short-term exposures cause injuries; and, 3) case reports demonstrate that medium-dose, medium-exposure levels (such as those received by Ms. Hayes and her fellow workers) cause harm. This information tied with the physical symptoms, a review of the individual history, a physical exam and testing[2], allowed me to reasonably conclude that these organic solvents were the cause of the injuries that were clearly found to exist in Ms. Hayes. In addition to the case reports that I testified to both in my prior offer of proof and at the time of trial, I enclose an additional case report that is extremely similar to the outcomes and injuries reported by Ms. Hayes and the other workers at this site. R. Singer, *Neurotoxicity Guidebook*, 94-99 (1990). This case report is annexed hereto as Exhibit 5.

6. Drawing conclusions about probable neurotoxic exposures and effects by extrapolation from knowledge of other substances is a common and accepted practice in the applied sciences of industrial toxicology and occupational medicine. It is common scientific practice to extrapolate estimates of toxicities from one species to another and from exposure doses other than those actually tested. We extrapolate among differing exposure situations because they extend in a continuum from short-term, high-dose exposures to long-term, low-dose exposures; these would all be

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[2] This methodology is the classic methodology used by all doctors of environmental medicine, toxicologists, and others who testified. These methods were not contested by any testifying physicians.

expected to have similar effects on bodily tissues, although the proportions with particular affects would be expected to vary with the total dose. The relatively new scientific discipline of risk assessment typically uses all the types of extrapolations mentioned above, and this method has become the preferred standard for assessment of environmental chemical effects. As set forth above, we had the additional benefit in the extrapolation that I used at the time of trial, of a great deal of anecdotal evidence that verified the extrapolation method in the medium-dose, medium-exposure range. This was not a simple extrapolation without ancillary information. The ancillary information tied with the peer review studies assisted us in verifying the extrapolation results. In this matter, we also had the benefit of neuropsychological studies that clearly demonstrated that Ms. Hayes suffered from organic brain syndrome. This type of syndrome is one which one might a person to be suffering from as a result of this type of an exposure. We had Dr. Breysee's testimony that the exposure levels were five to ten times the permissible exposure limits. We knew the approximate amount of time of exposure that Ms. Hayes had. We had evidence of intoxication from the exposure from a number of sources including Ms. Hayes as well as the other workers. We had demonstrable pulmonary effects from the exposure and we knew that the exposure involved organic solvents that were used at the work site which were perfectly compatible with the findings that were made.

7. The Federal Food and Drug Administration uses extrapolation routinely as a means of determining whether or not particular chemicals are appropriate for usage by humans. It is necessary to extrapolate because it is morally unacceptable and reprehensible to expose human beings to chemicals that are believed to be injurious to human beings at levels that would do them harm. This has been true for 100 years or more. As an example, scientists routinely use animals which are considerably smaller as a means of attempting to determine whether or not particular chemicals are harmful to

human beings. They use animals that have the same or similar type of metabolism as a human being; however, scientists are often times forced to extrapolate from the dosages given to animals up to human size and characteristics in an attempt to determine whether or not the chemical in question will do harm to humans. Scientists then, routinely, based upon the effect upon the animals of these chemicals, make policy decisions as to whether or not the chemicals or food additives will be used by human beings and if so, in what dosages. Additionally, extrapolation is used as a means of determining the long term effects of various chemicals or food additives. It is impossible for science to wait for 30 or 40 years to try to determine whether or not a particular food additive or chemical will have long term effects on a human being. Thus, animals are given larger dosages of the chemical or food additive in an effort to determine what the long term affect of those chemicals and food additives would be on not only the animal but using extrapolation on human beings. This is a common and widely accepted scientific method for determining the effects of chemicals or food additives on humans. The same principles are applicable to organic solvents.

8. All organic solvents share the property of preferential accumulation in fatty neural tissue with risk of acute and chronic damage to nerve cells and loss of neurologic functions. TCA and PERC are organic solvents. Since there are no organic solvents which do not share this property, it is scientifically acceptable to extrapolate the expectation of solvent-induced neural toxicity to all organic solvents, including 1,1,1-trichloroethane (TCA) and PERC. Variables which would affect the risk of such neurotoxic effect manifestations would include susceptibility of the exposed individual, size of the exposure dose, and relative potency of a neurotoxic agent. Exposed individuals may tolerate larger exposures to neurotoxic agents believed to be less potent (e.g., TCA). However, doses large enough to produce intoxicating effects have the same potential for chronic

neurotoxicity as would manifestations of more potent agents (e.g., TCE). Similarly, neurotoxic agents with low vapor pressure and higher TLV (e.g., PERC) are absorbed rapidly through the skin, so could produce the same type of neurotoxicity as TCE. I took into consideration these factors in arriving at my conclusion. These extrapolations are scientifically acceptable because of the affinity of all organic solvents for fatty neural tissue. I took all of this information into account in reaching my conclusions.

9. The Court was also concerned about the use of studies of other organic solvents as a means of determining the toxicity of TCA and PERC. As N.H. Stacey (Editor) points out in the standard text, *Occupational Toxicology*, Chapter 11, "Toxicity of Solvents" (1993), all solvents at certain levels will have toxic responses by workers. Some types of solvents may have differing effects but, it is a well accepted scientific principle that, solvents are toxic and will manifest themselves in a variety of injuries and problems including the accrued effects of solvents: disorientation, euphoria, giddiness, confusion, followed by a progressive loss of consciousness, paralysis, convulsion, and death. In this working situation, there is clear evidence of the disorientation, euphoria, giddiness, confusion, and with certain of the workers, progressive loss of consciousness. Thankfully, it did not move beyond that. As Stacey points out in Table 11.9, additional chronic effects of the halogenated hydrocarbon solvents such as trichloroethane and tetrachloroethylene (PERC) cause chronic effects as a result of the exposures. Solvent disease and psycho-organic disease, are just some of the descriptions given to the chronic exposure to solvents. These conditions have the effects including memory impairment, coordination impairment and deterioration of personality. We have seen that in these workers. Clearly Ms. Hayes suffers from memory impairment and deterioration of personality based not only upon her history, but also testified to by Dr. Wiens, PhD who did the comprehensive neuropsychological workup.

10. As J. LaDon (Editor) points out in his book *Occupational Medicine*, page 272-273 PERC (LaDon used PCE rather than PERC) is a solvent most commonly associated with neurotoxicity. As pointed out by Laine and Riihimäki in *Safety and Health Aspects of Organic Solvents*, (1986) in their chapter on acute solvent intoxication, exposures to perchloroethylene and 1,1,1-trichloroethane as well as other organic solvents will cause headache, light-headedness, drowsiness, fatigue and dizziness as a result of central nervous system depression. Laine and Riihimäki at 124. Cardiac arrhythmias have been attributed principally to high exposures involving fluorinated hydrocarbons including 1,1,1-trichloroethane. It is interesting to note that the records reveal that Dan Glass as well as other workers reported significant cardiac arrhythmia following their exposure. Laine and Riihimäki also report that exposures to 1,1,1-trichloroethane resulted in feelings of light-headedness with a loss of coordination and equilibrium with exposures of only one hour at 900 parts per million. Considerably less than the exposure here. They also report that solvents which evaporate more easily are generally regarded as more hazardous than solvents with relatively low evaporation rates. 1,1,1-trichloroethane and perchloroethylene have extremely high vaporization rates. They also report that the use of solvents in confined spaces create a more serious risk and that this is particularly true when there are inexperienced workers. Here, these workers were inexperienced and were working in confined spaces.

11. As Gerr and Letz point out in the standard text *Environmental and Occupational Medicine*, "Solvents", Chapter 66, (1992) acute neurological effects are related to the "anesthetic property of solvents, manifesting as transient symptoms such as dizziness and light-headedness. A chronic, irreversible 'solvent syndrome' that can include loss of intellectual function has been described." Gerr and Letz at 843.

12. For all of the foregoing reasons it is both scientifically

acceptable to draw conclusions from other organic solvents particularly in light of the information that we do have concerning PERC and 1,1,1-trichloroethane. It is also scientifically acceptable to use extrapolation in determining the effects of moderate exposure dosages for moderate periods of time such as that experienced by Debbie Hayes particularly in light of the anecdotal information that we do have that confirms that the extrapolation method is accurate in this situation.

13. Given all of the foregoing, the changes that were noted by Ms. Hayes, her history, her neuropsychological testing, the testing that was done on her lungs, the nature of the exposure and its intensity that is well documented, and what we know about TCA, PERC, and the family of organic solvents that it comes from, this exposure was the proximate cause of the injuries to Ms. Hayes.

/s/_____
DR. WILLIAM MORTON

SUBSCRIBED AND SWORN to before me this 17th day of December, 1998.

/s/_____
NOTARY PUBLIC in and for
the State of Washington,
Residing at _____
My commission expires: _____

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs' vs. GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	))))))))	NO. CS-92-0081-AM DECLARATION OF PAULA A. LANTSBERGER, M.D.

I, Paula L. Lantsberger, do state and declare under the penalty of perjury under the laws of the state of Washington that the following is true and correct:

1. I am a physician licensed in the state of Washington.
2. Attached is a current copy of my curriculum vitae.
3. My deposition was taken on multiple occasions in this case. Pre-trial I filed an Offer of Proof, and I testified for approximately five days during the trial in 1994.
4. During my depositions counsel for Defendants asked multiple questions about documents in my file that were part of the workers' compensation claims for the patients, Merlin Carlson, David Schudel, Tim Schudel, Dan Glass, Craig Thompson and Kathrene Howell Froese. The documents were in response to panel evaluations and questions to me as the treating physician.
5. The manner in which physicians must handle workers' compensation claims is different, from what I understand, in civil litigation. In workers' compensation claims the physician is not always free to answer proceedings and inquiries by the Department of Labor and Industry as you would as a medical physician. In the workers' compensation claim there are "categories" of injuries. Under the regulations there are certain signs and symptoms that a physician matches up to meet certain categories. There are medical conditions which are not part of workers' compensation such as "headache".

Medically, I recognize and diagnosis headaches and their respective etiology, These workers had headaches that I diagnosed and treated that I believe are probably related to toxic exposure.

6. In workers' compensation there is a regulation that requires a physician to consider a "whole body aggravation". Whole body aggravation is defined by the Department of Labor and Industry. I have asked counsel to point out those regulation to the Court.

7. During my trial testimony I believe that matters became somewhat confusing because the defense attorneys were asking me about portions of my deposition which dealt with workers' compensation. Defendants apparently were objecting when I answered the questions in terms of who the Department of Labor and Industries would address the matter. During the course of my testimony I tried to explain to the Court and to counsel that there is a difference between what I do as a physician treating a patient as it would be in civil litigation and what is done to answer the questions in connection with a workers' compensation claim.

8. In treating the patients I consider their exposure history, their past illnesses and symptoms, any pre-existing disease, and whether they have a smoking history. I also perform tests to rule in or rule out other conditions. In the earlier proceedings I provided extensive offers of proof including identification of a recognized text outlining pulmonary injuries associated with exposure to hazardous chemicals and materials. I referred the Court to Chapter 11 in Hazardous Materials Clinical Principles Environmental Health, edited by John B. Sullivan, Williams and Wilkens, Baltimore (1992).

9. The chemicals, Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzenee were present at the 1988 PCB cleanup in large quantities. All three of these chemicals individually are known to injure the lung tissue. Most certainly these chemicals in combination injure the lung tissue. There were other chemicals that were present at the cleanup site that

are injurious of lungs.

10. Counsel has provided me with an instruction from Washington Pattern Instructions WPI 3rd 30.17 and 30.18 on what I understand Washington law to be on aggravation of pre-existing condition. This instruction has helped clarify for me the difference between what is done in a workers' compensation claim and what is done in civil litigation.

11. With my patients, Merlin Carlson, David Schudel, Tim Schudel, Craig Thompson, Dan Glass and Kathrene Howell Froese, I considered their smoking history, Considering their smoking history with objective signs of lung injury is basic medicine. In considering their smoking history, I considered how long they had smoked, how much they had smoked and what their current age was. There is scientific data out there for us physicians identifying how much damage is done to the lungs over a period of time depending on the number of pack-years that an individual smokes.

12. I performed standard pulmonary function tests on all of these workers. I performed the same pulmonary function tests that other physicians performed. I interpreted those tests in the same manner that other physicians interrupted those tests. I do not believe anybody questioned the pulmonary functions tests that I did nor my interpretation. With several of the patients I sent them to other physicians for second opinions on the pulmonary function results because I was finding the damage to the lung was so profound. For example, I referred Mr. Merlin Carlson to Richard Lambert, M.D., a Pulmonogolist.

13. Based upon the jury instruction of aggravation of the pre-existing condition, my opinions as to the lung damage are as follows:

a. Merlin E. Carlson, Jr., has on a more probable medical basis, a permanent aggravation of his pre-existing smoking condition by his exposure to the toxic chemicals present at the 1988 PCB cleanup including exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzenee. The damage from the chemical exposure

is permanent. I have ruled out with multiple tests including a cat-scan that there is no other case for the permanent lung condition.

b. David Schudel, on a more medical probable basis, had an aggravation of his preexisting lung condition from his smoking. Further, Mr. Schudel, after treatment with me gave up smoking. However, the permanent damage to his lungs continued to be a problem despite giving up smoking. The damage from the chemical exposure is permanent.

c. Tim Schudel, on a more medical probable basis, had an aggravation of his preexisting lung condition by his toxic exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzenee. Again, with Timothy Schudel I ruled out other causes for the aggravation of his pre-existing lung condition due to his smoking history.

d. Craig Thompson, on a more medical probable basis, had an aggravation of his pre-existing smoking condition. The pulmonary function test indicated that Craig Thompson had a more probable permanent aggravation of his pre-existing lung condition by his toxic exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzenee.

e. Daniel Glass, on a more probable medical basis, had an aggravation of his pre-existing lung condition by his exposure to Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzenee.

14. During pre-trial and in trial, as I mentioned, I identified for the Court Dr. Sullivan's text. in that text there is a description of 'Solvent Syndrome". Attached to this declaration is a copy of a table that identifies the clinical presentations that are present with Solvent Syndrome. Solvent Syndrome is a condition that has been known for more than 100 years. In Chapter 64 and 106 of Sullivan text there are multiple peer reviewed articles present in the bibliography of each one of those chapters. It is my opinion on a more probable than not basis that the Merlin Carlson, Dan Glass, Craig Thompson, David Schudel, Tim Schudel and Kathrene Howell Froese more probably than not have

Solvent Syndrome due to their exposure to the toxic chemicals at the 1988 PCB cleanup.

15. I have reviewed Dr. William Morton's declaration identifying the fact that physicians recognize and routinely use extrapolation to correlate injuries to humans form toxic substances. I am familiar with Casarett and Doull's textbook *Toxicology, The Basic Science of Poisons.* In fact, I use a copy of that myself, I agree with the opinions that Dr. Morton has expressed as to the use of extrapolation and how extrapolation is used with physicians.

SIGNED this 21st day of December 1998, at Spokane, Washington.

/S/_____
PAULA A. LANTSBERGER, M.D.

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THE HONORABLE ALAN A. MC DONALD

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON ATSPOKANE

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON, JR.; TIMOTHY SCHUDEL; SANDRA SCHUDEL, husband and wife, and the marital community composed thereof; KATHRENE RAE HOWELL; CRAIG A. THOMPSON; DEBBIE GUARGANA WILLIAMS; JOHN HOPKINS; RUTH HOPKINS; husband and wife, and the marital community composed thereof,	)	No.CS-92-00081-AAM
Plaintiffs	)	
vs.	)	DECLARATION OF DR. KAYE H. KILBURN, M.D.
GENERAL ELECTRIC COMPANY, a foreign corporation; KAISER ALUMINUM AND CHEMICAL CORPORATION, a foreign corporation,	)	
Defendants.	)	

I, Kaye H. Kilburn, M.D., do state and declare that under the penalty of perjury and under the law of California the foregoing is true and correct:

1. I am a physician. Attached to this declaration is a copy of my curriculum vitae. See Exhibit **A**. I point out that my undergraduate degree is in chemistry. Over the years I have kept up with my knowledge about chemistry, including its application to the human experience.

2. I have reviewed the following materials: Spokane County Health Department investigation of the 1988 PCB-clean up at the Kaiser Trentwood plant in Spokane; Washington; photographs of the area where the clean-up occurred; the rare data of Drs. Samuel Milham and Peter Houck; the peer-reviewed article *Organic Solvent Encephalopathy: An Old Hazard Revisited* "American Journal of Industrial Medicine", Vol. 22 pp. 109-115 (1992); the Material Safety Data Sheets on the chemical products used in the clean-up; medical records of Merlin Carlson, Daniel Skemann, David Schudel, Timothy Schudel, Craig Thompson, Dan Glass, John Hopkins, Ruth Hopkins, Kathleen Howell Froese, Debbie Guaranga Hayes, and Margaret Larive; the Declaration of Daniel Glass; Hon Pham' testimony; the declaration of Dr. William Morton, M.D.; and the published opinion in *Schudel v. General Elec. Co.*, 120 F.3d 991, 997 (9th Cir. 1997).

3. I performed physical examinations and extensive testing on Merlin Carlson, David Schudel, Timothy Schudel, Craig Thompson, Dan Glass, Debbie Guaranga Hayes, and other workers present at the 1988 PCB Kaiser Trentwood clean-up.

4. Over my professional career, I have more than three decades of experience in evaluating, testing and investigating circumstances, where humans are exposed to hazardous materials. I have researched and published extensively in peer reviewed journals on the hazardous materials and chemicals involved in the 1988 PCB clean-up at the Kaiser Trentwood plant. Before I was aware of this litigation, I had

independently considered a number of peer reviewed publications by other witnesses in this case, including Samuel Milham, Jr. M.D.

5. I am professional familiar with the hazardous materials and chemicals involved in the 1988 PCB clean-up at the Kaiser Trentwood Plant.

6. Several of my publications are pertinent to the known ability to injury of the hazardous chemicals used in the 1988 PCB clean-up. I refer the court specifically to Chemical Brain Injury, by Kaye H. Kilburn, M.D. John Wiley and Sons, New York (1998). In this medical momograph, I have complied objective documented test for determining whether exposed individuals have been injured by hazardous chemicals including 1,1,1- Trichloroethane (TCA), and Perchloroethylene (PERC). This textbook also contains extensive bibliographies on peer-reviewed articles that document injuries due to the hazardous materials and chemicals. Attached is chapter 4, concerning method to assess brain damage is pertinent to the questions, raised by this court from the opinion of *Schudel v. General Electric.* See Exhibit **B**. The chapter addresses many of the test and chemicals that are subject of this litigation.

7. I am familiar with and have used Casarett & Doull's Toxicology, The Basic Science of Poisoning, 4th Edition (1991). As a practicing Occupational Medicine Physician for three decades, as medical school professor/physician, who teaches medical students and physicians with 220 published papers and as a research investigator, I have extensive experience and knowledge about the methodology of using extrapolation in the area of toxic injury in humans. I have reviewed the Declaration of William Morton. I agree with his discussion of the medical recognition and utilization of "extrapolation" by physician and scientist, when considering the injury and harm caused by hazardous materials and chemicals. It would be unethical and probably illegal under most states' laws to conduct test in humans at five to ten times the permissible exposure limits levels of TCA and PERC

in humans to empirically establish dose levels that produce neurotoxic injuries. Physicians, scientists and governmental agencies, including the Environmental Protection Agency (herein EPA) and Occupational Safety and Health Administration (herein OSHA) routinely extrapolate from very low level chamber studies, animal studies and case reports to arrive at probable scientific and medical opinions in determining what and whether specific injuries are associated with a particular hazardous substance. This is policy for the U.S. National Toxicology Program, the National Cancer Institute and International Agency for Research on Cancer (IRAG) a WHO branch.

8. I have done some of the original research for OSHA on setting safety standards for chemicals. Extrapolation is routinely used to set safety standards.

9. The opinion of the court in *Schudel v. General Electric.* is not based upon what has been known for decades about TCA and PERC to cause neurotoxic injuries at medium exposure levels, such as repeat exposures in a short period of time to levels that are five to ten times the exposure limit levels. I refer the Court to Solvent Neurotoxicity, by Peter Arlien-Søborg, CRC Press (1992). There are chapters on TCA and PERC specifically addressing the ability of these chemicals to injury in circumstances such as the 1988 PCB clean-up at the Kaiser Trentwood Plant. See attached chapters 12 and 14.

10. I have read where the *Schudel* court said, "Doctor Goldstein acknowledged that the biochemical mechanisms neurotoxicity of TCA and PERC has not been demonstrated. I have professional comments on the court's misperception of the recognized and pertinent science. The biochemical mechanisms of most toxic chemicals are not known. For example, we know that lead is neurotoxic; however, we do not know how lead causes the injury. We know that asbestos injures the lung and causes high maligant tumors called mesotheliomas. We know that the asbestos enters the human cell. We do not know the biomechanism of how asbestos enters the cell or how it causes mesotheliomas. Asbestos exposure causes mesotheliomas in man and many experimental

animals. Another example is that we know that alcohol affects the brain; however, we do not know the biomechanism of how alcohol affects the brain. In short the fact that one does not know how TCA and PERC causes neurotoxicity the biomechanism does not diminish the scientific and medical connection between toxic exposure and injury.

11. Physicians and scientists look at the toxicity of chemicals by considering the chemical family to which they belong. Physicians and scientists rarely look at chemicals individually for purposes of determining toxicity. Chlorinated organic solvents are one family of toxic chemicals. 1,1,1- Trichloroethane (TCA), Perchloroethylene (PERC), and Tricholoroethylene (TCE) are in the family of chlorinated organic solvents. All of the chemicals in the chlorinated solvent toxic family are scientifically established to be neurotoxic at sub-lethal short term exposures. Several cause general aneshesia and if "over done" death.

12. There are other matters that are pertinent to determining whether the cleaning products used at the 1988 PCB clean-up were neurotoxic. They are as follows below. Most organic solvent cleaning products are not 100 % pure. In any cleaning mixture with the primary ingredient of TCA, at least eight to ten percent of the mixture would also include tricholoroethylene (TCE). Further, one should realize that the interconversion of TCA to TCE would easily occur under the circumstances of the 1988 PCB clean-up at the Kaiser Trentwood Plant. The difference between TCA and TCE is two hydrogen atoms and a single versus double carbon to carbon bond. A small amount of heat will convert TCA to TCE and TCE to TCA. The mixing of these chemicals together in the large steel drums probably resulted in the interconversion of the TCA to TCE from the heat of the chemical reactions created by mixing these and other chemicals—such as sodium hydroxide, hydrochloric acid and PCBs.

13. It has been known for many decades that repeated exposures to TCA above permissible exposure limits for days or weeks can cause permanent neurotoxic injury. From the materials that I have reviewed, many of the workers probably, over a period of days and weeks, were cumulatively exposed to sub-lethal doses

of TCA, PERC and the other organic solvents present that produced nausea, vomiting, headaches, sleep disturbances and more symptoms.

14. There were other chemicals that were present in the 1988 PCB cleanup that were also neurotoxic. Those included the conversions of the Polychlorinated Biphenyls to polychlorinated dibenzofurans. This is a molecule that is relatively complex with up to 8 chlorines atoms. Counsel has attached page 748 from Hazardous Materials Toxicology: Clinical Principles of Environmental Health by John B. Sulivan and Garry R. Kreiger, Williams and Wilkens, Baltamore (1992) to this declaration. Figure 651 shows the PCB molecule. PCB molecules are converted to molecules that has powerful neurotoxic effec 100 to 1000 times that of the parent, including Polychlorinated Dibenzofurans (PCDF). I have asked counsel to attach page 757 of Sullivan's book where the chemical structure of PCDF's are shown. It takes heat to convert PCBs to PCDF. Thus a small change in the molecular structure of one toxic substance can make it far more toxic to humans. PCBs conversions to PCDF and Dioxons is a prime example. See Exhibit C.

15. The scientific literature is replete with the dangers associated with PCDF causing neurotoxic injuries. One example is the attached portions of Yusho: A Human Disaster Caused by PCBs and Related Compounds, Ed. Masanori Kuratsune *et al.*, Kyushu University Press Fukuoka (1996). See Exhibit D.

16. The circumstances in which PCB's can be interconverted to PCDF's were present in the aluminum refining prior to and during the 1988 PCB cleanup. I point out I have had over the years extensive experience investigating and testing individuals, who had been around fires whether PCBs were present. The interconversion occurs at temperatures at about 270 degrees centigrade. The electrical equipment in the furnace room probably routinely reached temperatures of 270 degrees. Further, there were repeat fires in the furnace room over the last 25 to 30 years before the cleaning. Those fires probably left layers of PCFDs on the walls along with the PCBs. The physical act of chemically removing or scrubbing the sludge off the walls of the furnace room probably volatized the

PCDFs. The workers of the 1988 PCB clean-up probably inhaled PCFDs as they scrubbed the walls and applied chemicals to the blackened surfaces in the furnace room.

17. There were chemicals that were present in the cleanup, Hydrochloric Acid, Sodium Hydroxide and Trimethylbenzenee, which are known to produce damage to lung tissue. Any one of these chemicals individually can damage lung tissue and the combination can most certainly damage lung tissue. Trimethylbenzene is easily converted to trimellitic amhydride that produces asthma also known as reactive airway disease (RADS). The investigation by Dr. Sam Milham objectively showed that the respiratory system of these workers was compromised in connection with their toxic exposure to these chemicals. The follow up pulmonary function test by Dr. Lantsberger and others demonstrated permanent damage to the lungs of these workers. My most recent pulmonary function test confirmed the lung damage. It is well established over decades of medicine that these chemicals injure the lung.

18. In some of my earlier research decades ago, I was involved in investigations and resulted in publication of peer reviewed studies demonstrating that Sodium Hydroxide used to wash cotton to make it medically clean and pure permanently injures the lungs. I refer the court to my curriculum vitae, where I have had numerous articles published in peer-reviewed journals on pulmonary injuries.

19. I understand that Dr Goldstein had it attributed to him that only five organic solvents which have been proven to be neurotoxic. I understand Dr. Goldstein was addressing publications by Dr. Herbert Schaumberg, M.D. I know Dr. Schaumberg. I am familiar with Schaumberg's work. What doctor Dr. Schaumberg thought 25 years ago was not true in 1994. The medical community recognizes in modern times 25 years of research is like 300 years of ordinary history. The increase in knowledge in medical science over the last 25 years has been phenomenal. In 1994 there were multiple organic solvents that were known scientifically and medically to be neurotoxic. Those neurotoxic organic solvents include TCA and PERC. It has been know for decades that repeat exposures to TCA or PERC that are above the permissible exposure limits have the

potential for causing neurotoxic injury, even when the exposure is a matter of days. I refer the court to the chapter of Dr. Arlien-Søborg's bibliography in the chapters attached, to Dr. Milham's bibliography in the article about this poisoning and the bibliography to the chapter of my textbook attached. In sorting out the injury, the methodology that a physician uses is obtain an exposure history, obtain the preexisting history, the presentation at the time of the exposure, laboratory tests to rule in and rule out other causes and to establish whether and extent of injury. Then, the physician uses extrapolation from the scientific literature to link up the relationship between the chemical exposure and the injuries. It appears from all of the materials that I have reviewed this is what Dr. Milham, Dr. Goldstein and Dr. Lantsberger, in, fact did with this group of workers.

20. After reviewing all of the materials and my examinations and testing, I have opinions based on reasonable medical probability as follows.

21. I have considered Mr. Carlson's pre-existing history. Merlin Carlson more probably than not has a neurotoxic injury from his overexposure to the organic solvents used in the 1988 PCB cleanup. He has a peripheral neuropathy due to his overexposure to the toxic chemicals. He has permanent lung damage due to his exposure to the caustic materials of the cleanup including the Hydrochloric Acid, the Sodium Hydroxide and the Trimethylbenzenee. The test results showing the abnormality are attached as exhibit F to this declaration.

22. I have considered Craig Thompson's preexisting history including his alcohol use. Craig Thompson did not have any proof of preexisting neurological damage due to his alcohol consumption. The testing that I did on him objectively shows that he has a substantial neurotoxic injury. It is my opinion on a more probable than not basis that Craig Thompson has suffered a neurotoxic injury as a result of his overexposure to the chemicals present in the 1988 PCB cleanup. Further, Craig Thompson has pulmonary damage. I have considered Craig Thompson's smoking history and made allowance for it. It is my professional opinion that Craig Thomopson on a more probable than not basis has suffered an

injury to his lungs due to his exposure the toxic substances uses in the 1988 PCB cleanup including the Sodium Hydroxide, Hydrochloric acid and the Trimethylbenzene. See attached Exhibit G.

23. Debbie Guaragna-Hayes has objective demonstrated neurotoxic injury by her previous testing and the testing that I performed. I have considered all of her preexisting history. It is my opinion on a more probable than not basis that Debbie Guaragna-Hayes has suffered a neurotoxic insult from her exposure to the chlorinated organic solvents and other hazardous materials at the 1988 PCB cleanup. Further, Mrs. Hayes has permanent lung damage. It is my opinion on a more probable than not basis that her permanent lung damage is due to her toxic exposure to the Sodium Hydroxide, Hydrochloric Acid and the Trimethylbenzene. See attached Exhibit H.

24. I have considered Tim Schudel's preexisting history of smoking and made allowance for it. From my review of the records and my test results, it is my opinion on a more probable than not basis that Tim Schudel has suffered a permanent injury to his lungs due to his toxic exposure to the Sodium Hydroxide, Hydrochloric Acid and the Trimethylbenzenee. See Exhibit I.

25. I have considered David Schudel's preexisting history of smoking and made allowance for it. From my review of the records and my test results, it is my opinion on a more probable than not basis that David Schudel has suffered a permanent injury to his lungs due to his toxic exposure to the Sodium Hydroxide, Hydrochloric Acid and the Trimethylbenzenee. See attached exhibit J.

26. I have considered Dan Glass' preexisting history and his cigarette use. His test results demonstrate a neurotoxic injury to his brain. He also has damage to his lungs. It is my opinion on a more probable than not basis that Dan Glass suffered a neurotoxic injury form his exposure to chlorinated organic solvents and the other hazardous materials present at the 1988 PCB cleanup. Further, it is my opinion on a more probable than not basis; he has suffered an injury to his lungs from his toxic exposure to the Sodium Hydroxide Hydrochloric acid and the Trimethylbenzenee. See Exhibit K.

27. I have tested more people from the 1988 PCB cleanup than discussed in this declaration. When I look at the individuals as a group, in light of doctor Sam Milham's findings, in light of the consistent findings of the various treating doctors and the consistency in their test findings with my test findings and the differences in the areas of the exposure and the lengths of exposure of these various workers, the pattern of injury is highly consistent.

28. Over my professional career, I have on multiple occasions examined large numbers of individuals who have chemical exposures and large groups who had no chemical exposures. I have a vast amount of data that I have reduced to statistics. The group of individuals that were exposed to the toxic substances in the 1988 PCB cleanup can be correlated with groups of individuals that have not been exposed to chemicals. I specifically correlated this group of workers to a group of 202 citizens in Arizona who had not been exposed to toxic substances. There is a statistical difference in the test areas that one would expect damage from the chemicals that were present at the cleanup site with this group of exposed workers. Attached to this declaration is a copy of my preliminary statistical analysis.

29. I have compared this group of chemically exposed workers to 202 individuals, who have not been exposed to chemicals. There is a stastical significance in the groups abnormal presentations compared to known non-abnormal persons. The statistical analysis is attached as Exhibit L.

30. The science that established the injuries in these workers is well-known and well-accepted through out the medical community of the world. The testing and examinations that I performed confirmed that the earlier examinations, testing and opinions of the investigating and treating physicians was traditional and reproducible.

SIGNED this ___ day of December 1998 at Los Angles, California

s/_____
Kaye H. Kilburn, M.D.

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Attorneys for Plaintiffs

THE HONORABLE ALAN A. MC DONALD

IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF WASHINGTON AT SPOKANE

DAVID SCHUDEL; DANIEL GLASS; MERLIN E. CARLSON, JR.; TIMOTHY SCHUDEL; SANDRA SCHUDEL, husband and wife, and the marital community composed thereof; KATHRENE RAE HOWELL; CRAIG A. THOMPSON; DEBBIE GUARGANA WILLIAMS; JOHN HOPKINS; RUTH HOPKINS; husband and wife, and the marital community composed thereof, Plaintiffs	No.CS-92-00081-AAM DECLARATION OF GEOFFREY A. KELAFANT, M.D.
vs.	
GENERAL ELECTRIC COMPANY, a foreign corporation; KAISER ALUMINUM AND CHEMICAL CORPORATION, a foreign corporation, Defendants.	

I, Geoffrey A. Kelafant, M.D., do state and declare that under the penalty of perjury and under the law of Illinois the foregoing is true and correct:

1. I am a licensed physician.

2. Attached is a copy of my current curriculum vitae.

3. I am the lead author of *Toxic Encephalopathy Due to 1,1,1-Trichloroethane Exposure* published in the peer-reviewed "American Journal of Industrial Medicine", Vol. 25, pp. 439-446 (1994). I understand that during the 1994 trial my article was utilized by several of the expert witnesses and mentioned in the Ninth Circuit Court of Appeals. Note my name has been misspelled in *Schudel v. General Elec. Co.*, 120 F.3d 991 (9th Cir. 1997).

4. I have reviewed the following materials: Spokane County Health Department investigation of the 1988 PCB-clean up at the Kaiser Trentwood plant in Spokane; Washington; photographs of the area where the clean-up occurred; the raw data of Drs. Samuel Milham and Peter Houck; the peer-reviewed article *Organic Solvent Encephalopathy: An Old Hazard Revisited* "American Journal of Industrial Medicine", Vol. 22 pp. 109-115 (1992); the Material Safety Data Sheets on the chemical products used in the clean-up; medical records of Merlin Carlson, Daniel Skeman, David Schudel, Timothy Schudel, Craig Thompson, Dan Glass, John Hopkins, Ruth Hopkins, Kathleen Howell Froese, and Debbie Guaranga Hayes; the Declaration of Daniel Glass; Hon Pham' testimony; the declaration of Dr. William Morton, M.D.; and the published opinion in *Schudel v. General Elec. Co.*, 120 F.3d 991, 997 (9th Cir. 1997).

5. I am familiar with the effects of 1,1,1-Trichloroethane (TCA) and Perchloroethylene (PERC) at different exposure levels in humans. I am also familiar with the other hazardous chemicals present in the products used in the 1988 PCB clean-up. I have extensive experience in evaluating whether laborers have been injured from exposure to hazardous chemicals such as the ones present at the 1988

PCB clean-up.

6. In addition to the article that I had published, I have done research into the whether TCA has the ability to injure with repeated exposures above permissible exposure limits over shorter periods of time than years of exposure.

7. Physicians and scientists routinely use the principles of scientific "extrapolation" for predicting the potential for hazardous chemicals to injury. This is a necessary function of practicing medicine. It would be unethical to test hazardous substances on humans at levels higher than the already established permissible exposure limits. Physicians routinely use the methodology of looking at animal studies, human chamber studies at very low levels of exposure, case reports of short term accidental toxic exposures above the permissible exposure limits levels and case reports of long term exposure at permissible exposure limits or lower exposures.

8. I understand that Dr. Daniel A. Goldstein used my study in *Toxic Encephalopathy Due to 1,1,1-Trichloroethane Exposure* along with other peer-reviewed articles on TCA, the exposure history and the medical examinations to extrapolate the injuries for the workers exposed to the toxic substances in the 1988 PCB clean-up at the Kaiser Trentwood plant. This was an appropriate methodology for Dr. Goldstein to employee in determining the relationship between the exposure and injury.

9. It is important to note the workers at the 1988 PCB clean-up were by history using multiple products with multiple organic solvents. The peer-reviewed literature includes multiple case reports demonstrating injuries occurring with repeat exposure at levels above permissible exposure limits of organic solvents for days or weeks. The peer-reviewed literature establishes organic solvents as a group do cause neurotoxic injuries with repeat exposures in the range above permissible exposure limit levels and sub-lethal levels. Combinations of solvents with other chemicals may increase the potential for adverse short and long term physical effects.

10. My research has included going back to the original

source documents of the studies, which led to the setting of exposure limits for TCA, PERC and other solvents. I have in my work, gone back and looked at the original chamber studies of the peer reviewed literature on TCA, PERC and other solvents. My review and study of this information is separate and apart from this litigation. It is my professional opinion based upon my education, experience and research that there is a potential for neurotoxic injury when a worker is repeatedly exposed over days or weeks to five to ten times the permissible exposure limits to organic solvents, including TCA. The repeat exposure to organic solvents like TCA and PERC to levels above the permissible exposure limits does not need to be for years before neurotoxic injury occurs.

11. From my review of the materials, these workers herein were exposed to other toxic substances besides TCA. Some of the Kaiser Trentwood cleaning products had 24% PERC, which is a known and recognized toxic substance. The combination of organic solvents with TCA and PERC presents a greater risk of neurotoxic injury. It is my professional opinion based upon my education, experience and research that there is a potential for neurotoxic injury when a worker is repeatedly exposed over days or weeks to five to ten times the permissible exposure limits to organic solvents, including PERC.

12. In my practice, I have familiarity and have researched the literature as it deals with Perchloroethylene (PERC) and other solvents. I am also extensively familiar with organic solvents and the consequences that they have as far as neurotoxic injuries.

13. I understand that the court has questions about whether, in this exposure, it is scientifically reasonable to use and extrapolation method based upon the facts of the exposure and what is known about the chemicals present, including TCA and PERC, and arrive at any opinions whether there was any injury to the workers at the 1988 PCB cleanup at the Kaiser Trentwood Plant. I understand that the court also has a question whether injuries can occur from exposure

levels such as those received by Merlin Carlson and the other workers at the cleanup site. I have been advised that Professor Peter A. Breysse from the University of Washington has evaluated all of the data and arrived at the opinion that the exposure levels were at 5 to 10 the permissible exposure limit levels.

14. I been advised that the other occupational medicine physicians that have reviewed this data have referred the court to such text as Casaret and Doull's Toxicology, The Basic Science of Poisoning, Fourth Edition (1991). In Casaret's and Doull's textbook there are sections on the utilization of a risk assessment analysis tool for extrapolating information. Extrapolation of data about hazardous chemicals is a widely accepted scientific principal and methodology in the area of occupational medicine and toxicology. As a practical matter the utilization of principles of scientific extrapolation are needed because of the ethical consideration surrounding testing of hazardous chemicals.

15. Evaluating human health effects from hazardous chemicals such as TCA and PERC and other organic solvents at medium to high dose levels would be unethical testing. There is sufficient data known about these chemicals that it would be unreasonable to use humans to test medium level exposures, chronic or high dose exposures. The ethical considerations are that serious injuries or death could be posed upon humans.

16. The process of extrapolation using a risk analysis tool provides a basis for determining a relationship between disease and exposure to a hazardous chemical and, based on what we do know about the chemical and thereby allowing the physician to set bounds on the range of what is known to have probably occurred to an individual.

17. The article *Toxic encephalopathy due to 1,1,1-Trichloroethane Exposure* does not stand for the proposition that injury only occurs at a single high level exposure to TCA or long term exposure at permissible exposure limits levels. In between the two ranges of exposures, the scientific

literature and principles of extrapolation establish that injury does and scientists do not understand the exact biochemical mechanism, *i.e.* Alcohol, occur.

18. Not understanding the precise biochemical mechanism for neurotoxicity of organic solvents is not unusual. Many substances, such as lead, alcohol, and asbestos, are generally medically accepted as potentially toxic and generally medically accepted as capable of causing devastating disease, though the exact processes are not well-delineated.

19. I advise the court because of my professional schedule, I was not able to provide Ms. Meade my declaration until the morning of December 24, 1998.

DATED this ____ day of December 1998, in Mattoon, Illinois.

s/_____
Geoffrey A. Kelafant, M.D.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs'	)	
vs.	)	NO. CS-92-0081-FVS
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	April 14 and 18, 1994 Trial Testimony of Daniel Goldstein, M.D.

RP 527:13 to p. 528:17

Question by Ms. Meade. Okay. And have you arrived at a diagnosis as to Mr. Carlson's condition?

Answer by Dr. Goldstein: Yes.

Q. And what is that, sir?

A. I believe that he has sustained a significant brain injury, a neuropsychological injury as a result of his solvent exposure.

Q. Sir, do you have an opinion, based upon reasonable medical probability, as to the cause of Merlin Carlson's brain injury?

Mr. Hollingsworth: Objection, Your Honor. Same basis as before.

The Court: Objection in regard to 702, 703 [528] overruled. And also, for the record, let me, I want to 12 make sure that the objection raised under 403 is also overruled. Please proceed.

Question by Ms. Meade:. You can answer the question.

A. I'm sorry, I've forgotten the question.

Q. Do you have an opinion, based upon reasonable medical probability, as to the cause of Merlin Carlson's condition?

A. Yes.

Q. And what is it, sir?

A. I believe that it was his solvent exposure in the

course of the PCB clean-up at Kaiser Aluminum in 1988.

Q. And why do you have that opinion, sir?

A. It is based upon my knowledge and experienceas a toxicologist, it's based upon my review of the medical records and all of the other materials that we just went through. It is based certainly on the neuropsychological testing and on the neurological examinations and other diagnostic testing, such as the MRI scan, which were done on Merlin Carlson and are entirely consistent with that diagnosis.

Q. And have you reviewed records of other persons that were at the 1988 clean-up? [592]

A. I have reviewed depositions of three other individuals, parts of depositions of three other individuals. I have reviewed extensively the medical records of one other individual who was involved in this incident. And I have also seen the study that was published by Doctors Houck and Milham in regards to this particular incident.

RP 788: 9 to p.794:18:

Q. Have you found what you had read about Dan Glass, what Dan Glass had to say about Merlin Carlson?

A. Yes.

Q. Could you pull that out in front of yourself?

A. If I can find it. Yes.

Q. Skipping the caption, can you please start and read what you believe is pertinent to your evaluation of Merlin Carlson.

Mr. Hollingsworth: Objection, Your Honor. Hearsay.

Ms. Meade: This is a sworn declaration by Daniel Glass. It is not hearsay. And he also relied upon it.

The Court: Objection is sustained at this juncture.

Question by Ms. Meade: Doctor, did you use the sworn testimony [789] of Daniel Glass in arriving at your opinions as to Merlin Carlson?

A. Yes.

Q. In evaluating individuals who have been exposed to toxic chemicals, do you in your routine, ordinary course consider information from other workers?

A. Yes.

Q. Do you in your ordinary course as a physician who practices in the area of toxicology, consider sworn testimony from persons to be reliable information as far as your evaluation?

A. I will take that sworn testimony and consider it and make every effort to determine whether, in fact,it is appropriately reliable. Lacking any other information, I'd have to assume that sworn testimony is accurate, at least to the best understanding of the individual giving the testimony.

Q. And you understand what it means for an individual to swear under the penalties of perjury in the law to tell the truth, do you not?

A. Yes, I do.

Q. And, sir, when you look at the declaration of Dan Glass, did you take it into account in light of what you knew about the chemicals that were present at the work site? [790]

A. Yes.

Q. Did you take it into account in light of what you knew about what other workers and other persons had said about what they had observed at the work site?

A. Yes.

Q. Does the declaration of Dan Glass give you information as to Merlin Carlson's condition at the work site?

A. Yes.

Q. Are sworn statements by workers at toxic exposure events the type of information that you and other physicians rely upon in arriving at opinions about the cause of a person's condition?

A. Yes.

Ms. Meade: I would move for the admission and permission for the Doctor to review with the jury this factual information that he has taken into account. I believe that I have raised an appropriate foundation under ER 703.

Mr. Hollingsworth: Objection, Your Honor.on the ground that it doesn't meet 703. Object on the ground that it's hearsay under 801. I object on the ground of 403 that its

prejudice, unfair prejudice, outweighs whatever probative value it has. [791] But under 703 and under any rule of 801, 801(24) or whatever, this affidavit came five years after the job. This affidavit is contrary to the affiant's own deposition. This affidavit is contrary to the weight of all the other evidence in this case which is that nobody passed out on this job. And this affidavit is contrary to the other information that is indicated thus far, and it's shown to be reliable thus far. So we object on those three grounds. This affidavit is clearly an out of court statement by a declarant that's being offered for the truth of the affidavit, and the declarant is not here.

Ms. Meade: The declarant is a party.

Mr. Hollingsworth: Well --

Ms. Meade: And it clearly falls under ER 703.

The Court: Objection as to Rule 703 hearsay and 403 are overruled. That doesn't mean that the document is admitted into evidence. It is not. You may inquire.

Question by Ms. Meade: Doctor, would you please share with the jury what information you found to be pertinent as far as forming a basis of your opinions as to Merlin Carlson? [792]

A. In paragraph number six of this statement it says, "During the work with QPI, at one point I found Merlin Carlson passed out. As I recall it Merlin was working on the bus bars. He was working on cleaning the electrical and hydraulic lines. I was shaking him and telling him to wake up, to get up and asking him what was wrong. After that Merlin was disoriented. He did not know where he was or what was going on." Paragraph seven, "After that Merlin was unsteady on his feet." eight, "Everyone was sick and woozy at one time or another during the clean up. For a while everyone was giddy and laughing. At other times, everyone felt like shit."

Q. Now, sir, why would that type of information be pertinent in evaluating whether a worker had received a toxic exposure to solvents?

A. Certainly altered mental status or loss of consciousness is an indication of very significant over

exposure.

Q. Doctor, in light of what we know are the admitted amounts of chemicals that were present in the pit that was being cleaned, using your medical knowledge, do you have an opinion based on reasonable medical probability as to whether there would be [793] likely an incident of Merlin Carlson having been passed out during the time that he was working there?

Mr. Hollingsworth: Let me just interpose an objection here, Your Honor, on foundation. In which she stated that there was something about an admitted amount of chemical that he was aware. I didn't realize there was a foundation for that, nor did I realize there was any admission as to that. So I object.

The Court: Objection will be sustained at this time. You may inquire.

Question by Ms. Meade. Sir, were you provided copies of the invoices where General Electric had purchased the chemicals to be used at the cleaning sit site?

A. I was provided the list of materials and quantities that were purchased. I was not provided actually with invoices to provide documentation for that day.

Q. Based upon the list -- strike it. The list of chemicals and the amount purchased, did you provide that list in your deposition to the defendants?

A. I believe that was an exhibit, yes.

Q. Based on the numbers of chemicals, the amounts of chemicals, what you know about the geographic site [794] of the pit, do you have an opinion based upon reasonable medical probability as to whether it would be likely that Merlin Carlson would be found in the condition that Mr. Glass described?

A. Well, this is exactly the kind of problem that I would be concerned about. I think I testified earlier, I guess yesterday, that it's difficult for me to imagine how anyone with any health and safety experience could possibly have allowed this kind of exposure to happen in the first place. of

materials there to represent a very significant hazard to human health and even human life. And this event certainly is consistent with the kind of overexposure that I believe has occurred.

RP 841:3 to p. 866: 11

Q. Do you recall Mr. Hollingsworth asking you about Pelkonen, P E L K O N E N?

A. Yes.

Q. For the record could you identify the title of that study?

A. It's entitled Post Susceptibility In Organic Solvent Toxicity by Olavin Pelkonen. It's published in a textbook, Safety And Health Aspects Of Organic Solvents 1986.

Q. Is that from a textbook that you use as a physician?

A. I don't actually have this particular test. I have seen it. I do not have if it in my own library, and it is no longer in print.

Q. You have a photocopy of one of the chapters in your book of materials there?

A. Yes. Like many books of this type, that book is not a textbook the way you would think of an ordinary textbook which starts with an introduction chapter and works its way through. It is one of a series of books by this particular publisher that publishes proceedings of scientific meetings. So it's really a collection of papers more than it is, in fact, a [842] book. Each individual chapter has its own author.

Q. In Doctor Pelkonen -- how do you say it?

A. I call it Pelkonen. It's a Scandinavian name. I won't vouch for any of my pronunciations on Scandinavian names.

Q. Does that study refer to toxokinetics and toxodynamics?

A. Yes.

Q. Mr. Hollingsworth was asking you a lot of questions about the chemicals and their effect and what's going on. Do all chemicals affect our body in the same way?

A. No.

Q. Do toxokinetics and toxodynamics have something to do with it?

A. They ultimately have everything to do with the issue. Toxicokinetics deals with absorption, distribution, excretion of toxic materials. Toxicodynamics deals with the effects of those materials. When you use those terms, you generally are referring to measurement and mathematical modelling of the particular chemical substances and effects.

Q. Now, Doctor Goldstein, when you had your deposition taken, you had your three textbooks on [843]organic solvents there available for Mr. Hollingsworth to look at over those three days; is that correct?

A. I had a number of textbooks. I don't remember how many.

Q. Many of the questions that you were asked last Thursday, were there scientific articles that would address your testimony?

A. Yes. There's a vast body of knowledge related to effects of solvents. I have these binders here. This is far less than half of what's available. I haven't even tried to collect every paper that's been published on this subject. A very large number of them.

Q. Do you recall Mr. Hollingsworth asking you if there were just a few recorded persons having injuries associated with organic solvents?

Mr. Hollingsworth: Objection. That misstates the record, Your Honor.

The Court: Counsel?

Ms. Meade: Well, I paraphrased what he said.

The Court: All right. It's difficult to recall every question that was asked on cross-examination. I don't know if it's worth the time necessary to spend reviewing all of those. I [844] will overrule the objection at this juncture and allow the witness to respond as able. You may inquire.

Question By Ms. Meade: Do you also recall Mr. Hollingsworth asking you if there were only a few case studies in the literature about organic solvents causing

problems?

Mr. Hollingsworth: Same objection, Your Honor.

Ms. Meade: And I point to page 638 of the transcript. I am taking that literally.

A. I remember that general line of questioning --

The Court: The objection is overruled. You may inquire.

The Witness: Sorry, Your Honor.

Question By Ms. Meade: Sir, in light of that question, did you point out a few of the many studies that you have in your notebooks here at the courthouse?

A. Yes.

Q. Are there approximately 250 million people in the United States?

A. That's about right I guess, yes.

Q. When you speak of a few case studies, does that have to be put into perspective of how many people there are in the world? [845]

A. I am not sure that's necessarily the relevant question. What matters is how many people are exposed to a particular toxic material.

Ms. Meade: I'd ask Mr. Dawson to turn over tab number two.

Question By Ms. Meade: Now, Doctor, in the Bowler study, how many workers were studied in that study?

A. There were 79 individuals in the original population of study of whom 63 were actually available for complete study. So 79 people in the original population, 63 individuals on whom results were actually reported.

Q. Could you please tell the jury what the title of that study was for the record?

A. Stability Of Psychological Impairment, Two-year Follow Up Of Former Microelectronics Workers Affective And Personality Disturbance.

Q. Going back to the words over there on the board, psychogenic, psychiatric, in your own words, can you explain to the jury whether it makes any difference if the workers had

neuropsychological problems or psychological problems when they're exposed to chemicals. How does this all fit together?

A. You can see two different things happening with [846] any chemical exposure. But if you're talking about solvents, this becomes a particularly difficult issue. You can see toxic effects of solvents on the nervous system. With exposure to solvents you can see balancing abnormalities, cognitive function abnormalities, difficulties in mathematical calculations or memory. You can see mood changes as well. You can see significant depression, for example. The reason it gets complicated is because not only do solvents have direct toxic effects on cognitive function, solvents also do have effects on mood.

This particular paper talks about affective disorders. Affective disorders are disorders of mood, particularly depression, which scientific literature would indicate is one of the effects of solvents on the nervous system. So it becomes difficult to sort out how much of an injury is organic, meaning direct organic medical injury to the brain; how much of it is psychological effects of the injury independent of medical damage to the brain; how much of it is psychological effect due to the solvents actually causing depression or other psychological abnormalities; and how much of it is depression that's due to the other underlying neurological damage. [847]

In other words, when you develop cognitive difficulties, if you can no longer do the things you used to do, no longer function at the level of function that you are used to having, people get depressed. It becomes difficult to sort out on a clinical basis which of those factors is the most important in any given patient. That's where neuropsychological testing becomes particularly useful. It can sort out to at least some extent those different issues.

Q. When you say it can sort out those different issues, whether it's organic, or whether it's psychological?

A. Yes.

Q. Sir, in the Parkinson study were there 567 workers involved?

Mr. Hollingsworth: Your Honor, I object. That's outside the scope of the cross. In support of that, Your Honor, I'd refer to page 638 which is the page that counsel referred to in which I did not ask a question about long term chronic effects but rather I asked the following question, and the witness gave the following answer.

"Question: You've testified that there are only a small number of case reports in the literature [848] in which lasting effects following acute exposure to solvents have been reported, right?

"Answer: That's correct."

So these questions about Bowler and Parkinson and the long term chronic effects of solvents, which I did not inquire into on cross-examination, are outside the scope of cross and therefore improper at this time.

Ms. Meade: Your Honor, I submit they are not out of context. I have taken several pages of the transcript, pages 638, 637, 630, 628 and 642 and tried to lump them together so we have fewer questions instead of many questions. And I am covering all those issues here together so we can get through this quickly.

(Pause.)

Ms. Meade: And, Your Honor, I have one other thing to add.

The Court: Ms. Meade, what else do you wish to add?

Ms. Meade: I also wish to add that counsel has opened up the area as to the studies that he relied upon his opinion. So this is within the scope of his redirect. There is also an implication that counsel was trying to create that MRI's are the [849] definition of whether there is a damage there or not. And this witness has identified scientific studies that would address this area of inquiry.

The Court: At this juncture, the objection is overruled. The witness may respond as able at this time. Please proceed.

Question By. Ms. Meade: Sir, for the record, could you please state the title of the Parkinson study?

A. Health Effects Of Long Term Solvents Exposure Among Women In Blue Collar Occupations by David King Parkinson, American Journal of Industrial Medicine, 1990.

Q. Now, sir, is this article here the type of article that you as a doctor rely upon in evaluating your patients?

A. Yes.

Q. Is the American Journal of Industrial Medicine a recognized learned treatise?

A. Yes.

Q. Now, sir, were there 567 workers that were evaluated in the Parkinson study? And perhaps if you look on page 663.

A. Yes. There were 567 people actually examined in relationship to that study. [850]

Q. And just briefly, so the jury understands what we're doing when we're jumping through these articles, are scientific articles written in a certain way as far as how they're organized?

A. Generally speaking, yes. There's usually an introduction followed by a discussion of the sample population being studied in this type of a paper. And the statistical and epidemiological testing methods that were used. Then a section on results which basically states the findings without discussion of their meaning or interpretation.

It's just supposed to be an objective section in which one sets forth the findings of research. And finally a discussion which will look at that data and discuss that data in the context of other knowledge in an attempt to draw conclusions from the data.

Q. Can you tell the jury how you, Doctor Goldstein, as a scientist, look at a scientific article and evaluate it? Just generally, what's the process there?

A. That's a very complicated question. Looking at a scientific article requires a great deal of underlying knowledge and experience, requires that you know in general something about the field, something [851] about other work that has been done previously in the field. To put an article in this

context, you need to look at the paper in terms of the quality of the techniques that were used, in terms of the appropriateness of the way the experiment was conducted.

You need to look at the type of statistical analysis that is used and decide whether, in fact, it is an appropriate statistical analysis, not only in terms of the type of statistic used but the way in which they're applied to the population. You obviously need to look at the data, be certain that it is complete. And in an epidemiological study, one of the things to look out for is the disposition of all of the people in the study which is why you've tabulated these here.

I always look back and find out how many people actually made it into the study. Bowler started with 79 and ended up with 63 for various reasons, illness, unwillingness to cooperate with the research, inability to speak the English language adequately for the neuropsychological testing. You always start with a general population from which you then draw a number of people to study. So you want to make sure you understand how that process occurred. [852]

Look at the data, and then finally look at the discussion of the data in order to determine what you think personally the data means. There are many examples of papers where I think the data may be quite good. It may be objectively reported. How to interpret that data can become a matter of scientific judgment.

Q. In the Parkinson study, is there any significance to how those 567 people were divided into different groups?

A. They were divided into different groups on the basis of solvent exposure. Some individuals having essentially none. Some having solvent exposure but in the past. Some having solvent exposure currently. And they also divided them down into how extensively their particular work involved the use of solvents.

So you had both a time factor involved. And in the long term sickness, was it recent exposure, was it past exposure. And I also had some consideration of how much time they actually spent working with solvents.

Q. Now, in these studies that you have pointed out, have they covered such things as neuropsychological testing?

A. Yes. [853]

Q. And the test results?

A. They cover the results of the test, yes. Is that what you're asking me?

Q. Yes.

A. Yes.

Q. Did you point out several studies as to Doctor Rasmusen?

A. I have several of his publications here. He has done research in the area of solvent damage to the brain. He has also published some review articles on the subject of appropriate psychometric testing and has spent some time on the development of neuropsychological test batteries.

Q. Do the studies that doctors do, do they sometimes go back and study the same group of people over time and write more papers about them?

A. It's not unusual to find a group of people who seem to be having some type of medical difficulty as a result of toxic exposure and follow them long term to see what has happened.

There are, in fact, some populations that have been followed in the toxicology literature since the time of the first world war on an ongoing basis to find out what the long term effects in this particular case of the a neurotoxic chemical were. [854]

Q. Sir, one of the studies by Dr. Rasmusen, is it solvent-induced chronic toxic encephalopathy?

A. Yes.

Q. And another one of the studies by Doctor Rasmusen is it psychometric testing for assessment of brain function after solvent exposure?

A. Yes.

Q. That word psychometric, what does that word mean?

A. Psychometric and neuropsychological are reasonably interchangeable for our purposes here today. Some people

call neuropsychological tests psychometric tests. Most psychometric test batteries also test things that are not strictly in the psychological realm. And in fact tests that he used, as I recall, do that. Just let me look. They're quite similar to the, in fact, to the neuropsychological tests that have been used by other authors.

Q. Sir, you mentioned cacosmia, C A C O S M I A, Doctor Ryan's study, did he have 17 people in his group?

A. Yes, he did.

Q. Sir, do you remember when Mr. Hollingsworth was asking you about biological indices of exposure? [855]

A. Yes.

Q. And have biological indices of exposures been studied for organic solvents?

A. I think it depends on how you define biological indexes of exposure. The discussion, as I recall it, from last week related specifically to my lecture notes. In those notes I was referring specifically to blood testing, urine testing, some other testing related to effects of a toxic material. For instance, lead will cause anemia. You can look at anemia and use it as an index of lead exposure.

It's not a very good one for a number of reasons, but that would be an example of how you can use that. For solvents in general, we don't have that type of testing available. If you use a broader definition and include neuropsychological testing, then we do. It depends how you want to define that. In my discussion, in my lecture notes that were being referred to at the time of my questioning, I was referring to a fairly narrow definition of the subject.

Q. In terms of being practical at the work site, is it practical to do neuropsychological testing on workers as you're going along?

A. It's being done in some studies. At this point [856] in time I do know of some industrial concerns that are doing base line neuropsychological evaluations and periodic neuropsychological evaluations using computer driven technologies rather than a complete neuropsychological test

battery. It's obviously not very practical to give somebody a complete two-day neuropsychological evaluation on a regular basis. You just can't afford the cost of the resources.

But the computer-based technologies, some of the work that the World Health Organization has done, that Rasmusen has done, have developed computer driven technologies that take roughly an hour to do a neuropsych. And those technologies, in fact, have been used in industry. I am not familiar with any data
that's come out of them because they're relatively new.

Q. Sir, you were asked a variety of questions about persistent and nonpersistent toxins. What's that got to do with organic solvents?

A. The issue of persistent effects versus persistent toxins had to do with my way of categorizing toxins for purposes of discussion in the outline that was being referred to last week. Some toxins persist. When you inhale asbestos, at least some of it remains in the lung on a long term. That's [857] a good example of a persistent toxin. Lead is the same way. Lead lays itself down in bones and remains in the system for such a long time, in fact, that somebody who has had a heavy lead exposure early in life will take that lead exposure with them to their grave.

There are toxins which persist in the body. The organic solvents do not fall into that category at least in terms of life span. I would consider them to be nonpersistent toxins. You have an exposure to them, and if you look at blood levels of those materials, within a matter of days to weeks, those toxins will no longer than present in the body. The persistence of the effects is a different matter. You can have a nonpersistent that produces persistent effects. That classification has to do with, in fact, whether a toxic material remains in the body for a very long time.

Q. Along that line there are a variety of questions asked about high levels, low levels of exposure to toxins and the persistent effect. Did you point out studies such as the one of Doctor Altman dealing with evaluating workers who were

exposed to PERC for low level periods of time for short days, for just a few days? [858]

Ms. Meade: If Mr. Dawson can turn to tab four.

Answer By The Witness: There are a number of studies that look at neuropsychological toxicities from acute exposure and find neuropsychological abnormalities such as Altman's paper. That was a situation in which they were studied on one occasion. We have no information of neurological abnormalities persisting long term. But certainly you can see neuropsychological abnormalities after short term exposure in a number of papers.

That's not terribly surprising when you consider that you can take these solvents and make somebody comatose with sufficient exposure certainly. You can see neuropsychological impairments ranging from mild impairment to outright coma that will persist for some period of time.

Q. For the record would you please identify the Altman title in its entirety?

A. Neurophysiological And Psychophysical Measurements Reveal Effects Of Acute Low Level Organic Solvent Exposure In Humans. That's Occupational and Environmental Health 1990. Actually it's International Archives of Occupational and Environmental Health 1990. [859]

Q. Is International Archives of Occupational and Environmental Health a journal article that you as a physician use?

A. Yes.

Q. And is it a learned treatise?

A. It's certainly a respected journal. It is peer review, yes.

Q. Now, in the Altman study, were there 22 men?

A. Yes.

Q. What chemical were they testing the men with?

A. Analytical grade Perchloroethylene, or PERC.

Q. Would that be Tetrachlorethylene?

A. Yes.

Q. Were these men exposed to high levels or low levels?

A. They were exposed at concentrations of 10 in 50 parts per million. At least that was the intended exposure concentration. There's some variability about those numbers because of the technique that was used for exposure.

Q. Were they exposed for four hours a day for four consecutive days?

A. Yes.

Q. Mr. Hollingsworth asked you a lot of questions about Trichloroethane and whether there were any [860] studies published which described people having toxic encephalopathy because of the chemicals. And you mentioned two studies, one by Califant and one by Milham?

A. Yes.

Q. For the record could you tell the jury how many workers were in the Califant study?

A. Twenty-eight.

Q. What chemical were the workers exposed to in the Kalifant study?

A. 1,1,1 Trichloroethane.

Q. In the Milham study, how many persons were there?

A. Twenty-six that were reported upon.

Q. Now, in those books that you have there, are there many other studies with varying groups of workers from one person to hundreds of persons that have been studied as far as exposure to organic solvents?

A. Yes.

Q. And in those books that you have there where there are hundreds of people that have been studied, have some of those people been exposed to Trichloroethane?

A. Yes. Although frequently as a part of mixed [861] exposures in industries, I believe we talked about last week, the rule in industry is that most people were multiple solvents rather than just a single solvent.

Q. Now, you were asked questions about negative studies and negative findings. Can you put that in perspective for us so we can understand just what that means completely

rather than just some isolated question?

A. Well, there are some serious statistical problems with so-called negative studies. If you classify people properly to the exposure and measure the results of that exposure carefully, in many instances you can see toxic effects. If a study is not carefully constructed, or if exposures are either not significant or are not properly classified, meaning you don't have people accurately classified as to how heavy their exposure was, you can easily end up with a so-called negative study. Meaning you don't see any effects statistically as a result of solvent exposure.

That may be due to the fact that exposures in general were not adequate. It may be due to statistical problems in the assignment of people to exposure categories. It may have to do [862] with difficulty in accurately classifying outcome measurements in actually measuring neuropsychological function. There are many statistical reasons why a study can be negative. You can't look at a negative study and conclude automatically that that proves a lack of effect. All it really means is perhaps because of limitations of design, the authors of that study were unable to document an effect.

Paradoxically in statistics it's actually easier to show that something does happen than it is to show that something doesn't. That's one of the biostatistical problems we have to deal with data involving solvent exposure or any other toxic material.

Q. Now, as far as looking at this whole issue of what happened to these workers in 1988, when you're analyzing it as a doctor, do you just take all the points in isolation here and there and just say yes, no, yes, no to them? Or do you synthesize everything and look at it?

A. We try certainly to look at the entire picture, take all the available information that we have, weigh it in terms of its quality, in terms of how reliable that information is and try and put together a picture which makes good scientific sense in terms of all the [863] available information about a particular event, the previous scientific literature, our

understanding about biological mechanisms, the mechanisms by which things are toxic. Toxicology of similar materials, results of exposures under different types of exposure conditions, etc.

We take all of that information into account when we try to synthesize our conclusions about a situation like this one including not only the positive studies but the negative studies that need to be evaluated as well.

Q. Sir, as far as looking at something scientifically, can the conclusions about a situation be skewed if information is taken out of context?

A. Yes.

Q. And can conclusions about what a study show be misinterpreted if one little sentence is taken out of context?

A. Well, that can happen in any situation. If you pull a sentence out of context, the results can be very misleading, yes.

Q. In terms of your testimony on Thursday, Doctor Goldstein, Mr. Hollingsworth steps you through seven items as far as quantifying the exposure of a worker to chemicals. Do you recall that? [864]

A. Yes.

Q. Now, taking all that and putting it altogether, just tell the jury in your own words what those seven steps have to do with what happened in this situation in 1988 as far as how you can look at it as a scientist.

A. Well, I talked about I guess seven different ways of trying to measure exposure. We don't know what the precise dose was that was administered to the people who were affected. It wasn't measured. We have some idea of how much material was ordered, but we don't know precisely how it was used. We can't precisely calculate anybody's exposure. There is a method which basically states when you have massive overwhelming exposure, as you would have, for instance, in an enclosed tank where somebody might be overcome by fumes, that although you can't quantify the exposure, you certainly know that it was large.

We had a number of individuals involved in this exposure who either lost consciousness or nearly did. Certainly we had a number of individuals who experienced an alteration in mental status which would indicate to me that there was a very large exposure here. Beyond that, although there are other ways of measuring exposure, we don't have that data because [865] measurement wasn't done.

Q. If the measurements were done, could you do the calculations as to how much exposure these workers had?

A. If the measurements had been done, we would know what the exposures were. Under these types of operating circumstances, it's not difficult to get ongoing monitoring of solvent exposure levels. The technology is readily available.

Q. So if we don't have the data on what the doses were that these workers were exposed to, that wasn't the workers' fault, was it?

A. It's certainly not their responsibility to see to industrial hygiene measuring.

Q. Mr. Hollingsworth asked you a lot of questions about flus in the wintertimes and colds and runny noses and the like. When you see persons that have been exposed to organic solvents and they don't know how they can heard them, do they complain about having flu-like symptoms?

A. It's not unusual. People relate their symptoms to experiences that they've had in the past when they attempt to describe them to a doctor. Everybody has had viral illnesses with low grade fevers and achiness and cough and congestion and general feelings of [866] malaise, of just not feeling well.

Many people will complain of, in quotes, "flu-like symptoms" when they have exposure to organic solvents. And in some instances they will begin to think, in fact, that they may even have an infectious cause for their illness. At Denver International Airport, the workers out there talked about the DIA flu. It was a term that they used for their own fairly severe respiratory symptoms that they were experiencing in that environment.

It's not unusual for that type of attribution to be made by

patients. They don't know the toxicology of the solvents. They don't know what to expect as a result of their exposure because they haven't studied the medical literature, but they know how they feel, and they describe it in the best way they can.

Q. Given the amounts of solvents that were present in 1988, given the fact that they were working down in a pit, would it be likely that all of the workers who were throwing up and coughing and feeling bad all had the flu as opposed to being exposed to solvents?

A. I think looking at the short term and long term effects of this exposure, that trying to explain this as an infectious is completely inappropriate. I just don't think that the overall levels of illness and symptoms, the time course of the illnesses can reasonably be interpreted as multiple cases of colds or flu. It's a commonly used excuse.

That's what happened at Denver International Airport where they tried to tell me that 10,000 people had the flu at the same time. It's a commonly used excuse because the symptoms are variable, but in this particular kind of situation, I think the likelihood of that is extraordinarily small.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs'	)	NO. CS-92-0081-FVS
vs.	)	April 27, May 2, and
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	May 3, 1994 Trial Testimony of Paula Lantsberger, M.D.

RP 2235:24 to 2236:13

Questions by Ms. Meade. Do you have an opinion based upon reasonable medical probability as to whether Merlin Carlson's [2236] brain condition is permanent?

Mr. King: Objection, Your Honor, 702, 703,prior rulings.

Ms. Meade: I've laid a foundation.

The Court: Overruled. The witness may respond.

Answer by Dr. Lantsberger: At this point I do believe it's permanent.

Q. Doctor, do you have an opinion based upon reasonable medical probability as to whether Merlin Carlson's lung problems are permanent?

Mr. King: Same objection, Your Honor.

The Court: Overruled.

Answer by Dr. Lantsberger: At this point I do believe it's permanent.

RP 2906:11 to p. 2916: 8

Question by Mr. King: All right. Prior to testifying in that, doctor, had you ever been shown Mr. Carlson's records from his schooling here in Spokane and over in Browning and in Great Falls, Montana?

(Pause.)

Answer by Dr. Lantsberger: I just have the educational history in Doctor Beaty's charts. Um, and then I don't recall

whether we went through those or not in the, in the depositions.

Q. All right. Do you recall at any time seeing or getting a report about his academic achievements while he was in school?

A. I don't recall whether we went through those or not in the deposition.

Q. All right. [2907]

A. I remember going through Doctor Beaty's report, but I, we went through so many people's educational records at the depositions, I don't remember.

Q. That's fair. If I asked you to assume, doctor, that when he was in grade school, Mr. Carlson took an IQ test and his score on the IQ test was 74. Would you be able to tell the members of the jury about where that would place him in terms of the general population by a percentile.

A. In terms of percentiles, that is in the, on the bell shaped curve, that's in the lower percentiles. And without having charts available, I wouldn't be able to place it as to the exact.

Q. All right. But do you recall telling us this morning that Tim Schudel, with an IQ of 89, would be in the 23rd percentile, and getting that data from Doctor Cripe's report.

A. Um, that was, yes, that was in Doctor Cripe's report.

Q. All right. And we can agree, can't we, that 74 would place Mr. Carlson at an even lower percentile. True?

A. True.

Q. Okay. Would you be able to say, doctor, that a person with a measured IQ of 74 would be somewhat slow [2908] in terms of their academic achievements?

A. They would be.

Q. Would you be able to say that a person with an IQ of 74 would likely have difficulty making normal progress through school?

A. Generally, yes.

Q. Would you say that a person with an IQ of 74 would probably be classified as borderline in terms of their mental

ability? In other words, they would, probably would be less than the wide range of average on IQ tests.

A. Generally, yes. Although the one caveat on IQ tests is that there is a cultural bias.

Q. All right.

A. Persons who are not, sort of the standard white, middle class type folks generally have to, have a lowering of their IQ. And somebody raised as Merlin was there will be a cultural decrease in terms of his performance.

Q. Are you an expert on the issue of to what extent if at all cultural bias affects IQ scores for Blackfeet Indians?

A. I am not an expert in terms of that, but I'm aware that there is a cultural bias in terms of IQ testing. [2909]

Q. All right. Is there also, doctor, a cultural bias that would affect how people from various cultures, including Blackfeet Indians perform on neuropsychological tests?

A. There are some culturation pieces to some of the neuropsychological tests, but.

Q. Are you an expert on to what extent cultural issues will affect performance on neuropsychological tests?

A. No, I'm not an expert.

Q. Doctor, in Mr. Carlson's case, I want you to assume that in addition to his listed IQ of 74, that he was asked to take achievement tests while he was in school to measure his degree of achievement at various courses or aptitudes. And that measured against his peers at the time of the testing, which for the record or for your assumption should be in April of 1982, Mr. Carlson was in the 12th percentile in terms of his local peers in reading, the 29th percentile in terms of his local peers in math, the 13th percentile in terms of his local peers in written expression, the 41st percentile in social studies, and the 45th percentile in science.

Ms. Meade: My question --

Question By Mr. King: [2910] Do you have those numbers in mind, doctor?

Ms. Meade: My question is, that this question is misleading, because he does not define "peers". And we don't

know whether the peers are all of the American population, including Caucasian and Native American or just the peers of Native American. The witness has already indicated that there is a difference. So the question is misleading.

The Court: Mr. King?

Mr. King: I'll rephrase, Your Honor.

The Court: Fine.

Questions By Mr. King: I want you to assume that the results that I just gave you were Mr. Carlson's results taken at the school in Browning, Montana in April of 1992. And that when his results were measured against national norms, I just gave you local norms, when his results were measured against national norms, instead of being in the 12th percentile in reading, he was in the 6th percentile. And instead of being in the 29th percentile in math he was in the 17th percentile. And instead [2911] of being in the 13th percentile of written expression he was in the 7th percentile. And that instead of being in the 41st percentile in social studies, he was in the 16th percentile. And instead of being in the 45th percentile in science, he was in the 15th percentile.

Do you have those in mind, doctor?

A. Yes, I do.

Q. Doctor, I also want you to, or perhaps you're aware of this, perhaps you're not. Were you aware that in the school years 1981, '82, '82-'83, and '83-'84, at Browning High School in Browning, Montana the highest grade that Mr. Carlson ever got in English was D. That he had three F's and two D's over that period of time. Were you aware of that?

A. I didn't know what his specific grades were. I did know that he had an injury in the middle of the 11th grade. And I don't know if that's the time frame that you're referring to.

Q. All right. Well assume that '81-'82 is the ninth grade and that '82-'83 is the 10th grade and that '83-'84 is the 11th grade. The question is, were you aware of his achievements in the subject of English in the 9th, 10th and 11th grades as being three F's and 11 two D's.

A. I don't recall if we went through those specifically in terms of his deposition or not. Other than that, no, I haven't seen his grade report cards.

Q. All right. Were you aware that in math in the [2912] 9th grade he got two F's the first semester. And an F and a C in the second semester?

A. As I said before, I didn't, unless we have gone through these in the deposition, and I don't recall specifically looking at these.

Q. All right.

A. Then, no, I hadn't seen them before.

Q. All right. Then please assume that in math as a 10th grader, he received two F's and as a 11th grader another F in his grades in Browning in Montana. And then please assume that, as ninth grader, in biology he got a D and a C in the first semester, an F and a D in the second semester. As a 10th grader he got two F's in biology. And before he left school as an 11th grader, he got an F in biology. Do you have those in mind, doctor?

A. Yes, I do.

Q. All right. Now doctor, I want you to also, I'll ask you first if you recall these. Do you recall seeing Mr. Carlson's grades from Spokane School District 81 when he was a student here in grade school?

A. No, I do not.

Q. All right. Do you have any understanding, doctor, as to how he did on achievement tests when he [2913] was schooled in this district in Washington in elementary school?

A. Unless you brought those out in the deposition, no, I haven't seen those.

Q. All right. Please assume, doctor, for purposes of my questioning, that he was measured as being in the 8th percentile in vocabulary, here in Spokane, as a sixth grader, 18th percentile in reading, second percentile in language, and first percentile in spelling. And the 7th percentile in mathematics. Do you have those in mind, doctor?

A. Yes, I do.

Q. All right. Doctor, were you told or were you aware in this case that Mr. Carlson was held back after the 1st grade?

A. I don't recall specifically if I was told this or not.

Q. All right. Do you know, doctor, or have you been told that in 1978-'79, while a student at Spokane School District 81, that Mr. Carlson's highest grade in reading was a D. Are you aware of that?

A. Mr. King, unless you showed me these in the deposition process I haven't seen these.

Q. You have not seen them at all.

A. Unless you showed them to me in deposition. [2914]

Q. All right.

A. I haven't seen these.

Q. Well, that's, that's my question. If someone else, like the plaintiffs lawyers, have showed those to you, I need to know that.

A. No.

Q. Fair enough.

A. No.

Q. Please assume then that his highest grade in reading in that year was a D, his highest grade in English that year was a D, his highest grade in spelling that year was a D, his highest grade in arithmetic that year was a D, his highest grade in social studies that year was a D, and his highest grade in science that year was a D. Do you have those in mind?

A. Yes, I do.

Q. Please assume the prior year, '77-'78, that his [2915] highest grade in reading was a D, his highest grade in English was a D, his highest spelling grade was a D, his highest arithmetic grade was a D, his highest social studies grade was a D and his highest science grade was a C minus. Do you have those in mind?

A. Um-hum.

Q. Please assume for the '76-'77 year that his highest grade in reading was a C minus, his highest grade in English was a D minus, his highest grade in spelling was a D, his

highest grade in arithmetic was a D, his highest in social studies was a D and his highest in science a C. Do you have those in mind?

A. Yes, I do.

Q. All right. And then please assume if you would, doctor, that in the '78-'79 school year, when Mr. Carlson would have been in the seventh and eighth grade time period, that his highest grade in science was a D, his highest grade in North American Culture was a D. Do you have those in mind?

A. Yes, I do.

Q. Would you agree, doctor, from the records that I've asked you to assume to be correct concerning Mr. Carlson, that he appeared to be achieving in his academic efforts about what would be expected given someone with an IQ in the range of 74?

A. In terms of, his IQ is not, not high and his grades are not high.

Q. All right. So those two things are consistent, are they not?

A. Yes.

Q. And we can agree that Mr. Carlson was not able to complete high school and has never gone back to get [2916] a GED, is that correct?

A. As far as I know, he did not finish high school and I'm not sure about the GED.

Q. All right. And I take it this information about his academic performance and his measured IQ doesn't change any opinion you have on toxic encephalopathy as it relates to Mr. Carlson, is that correct?

A. Correct.

RP 3065:18-24

Question By Ms. Meade: Doctor, when it comes to expressing opinions about the etiology of a worker's condition, do you take into account all the information that you have?

Answer By Dr. Lantsberger: Yes, I try to.

Q. Do you take into account all the information that you receive from other health care providers?

A. Yes, I do.

RP 3094: 13-19

Question By Ms. Meade: Would the chemicals that Merlin Carlson was exposed to alter his perception?

Mr. King: Same objection, Your Honor.

The Court: Overruled. The witness may respond.

Answer by Dr. Lantsberger: Yes, the chemicals he was exposed to would alter his perceptions.

RP 3100:11-21

Question By Ms. Meade: As to Merlin Carlson, do you have an opinion based upon reasonable medical probability as to whether he had an alteration in his level of consciousness at the time of the exposure?

Mr. King: Same objection, Your Honor. Asked and answered.

Answer By Dr. Lantsberger: Yes, he did.

The Court: Overruled. The witness may respond.

Question By Ms. Meade: Your answer again, doctor?

Answer By Dr. Lantsberger: Yes, he did.

RP 3143:2-12

Question By Ms. Meade: Would you tell the jury if you have an opinion, based upon reasonable medical probability, as to Merlin Carlson's condition in relationship to his exposure to the chemicals in 1988 at the Kaiser Trentwood plant.

Mr. King: Same objection, Your Honor.

The Court: Overruled.

Answer By Dr. Lantsberger: In terms of his entire exposure, his preexisting as, as a consequence of his exposure, I think that his preexisting problems were aggravated by his exposure at Kaiser on a more probable than not basis.

RP 3216:9 to p. 3217:10

Question By Ms. Meade: When you take that examination in 1989, your examination in 1990, and all the tests that you had performed in conjunction with that, do you have an opinion based upon reasonable medical probability as to whether Merlin Carlson was manifesting signs of toxic encephalopathy probably in 1989?

Mr. King: Your Honor, I'll object. She's leading. It's outside the scope. There is no foundation. The witness didn't see the patient in 1989.

Ms. Meade: I didn't suggest the answer. I am asking her for her opinion.

The Court: Objection is overruled. The witness may respond to this question.

Answer By Dr. Lantsberger: Can I have you read the question again to me, again, please.

Ms. Meade: May Madam Court Reporter read [3217] it?

The Court: Yes. (The reporter read back as requested.)

Answer By Dr. Lantsberger: Based on the aggregate of the information that I acquired on Merlin over the last several years, I believe that the condition of the toxic encephalopathy, problems with his memory and concentration and attention were more probably than not associated -- aggravated by his exposure to the chemicals on his work site.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs'	)	NO. CS-92-0081-FVS
vs.	)	
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	May 4 and 5, 1994 Trial Testimony of Lloyd I. Cripe, Ph.D.

RP 3489: 2 to p. 3491:25

Question by Ms. Meade: Would you tell the jury what your opinion is on a more probable than not basis as a neuropsychologist as to what the variability in Merlin Carlson's test is attributed to.

Objection Mr. Hollingsworth: I object, Your Honor, under 702, 703 and prior rulings.

Ms. Meade: I am not asking about --

The Court: Objection is overruled. The witness may respond to the question asked.

Answer by Dr. Cripe: Yes. It was my opinion and the combination of all of the information I had regarding Mr. Carlson that he had a combination of neural behavioral impairments. That is, his brain wasn't working right. He was also psychologically easily distressed. By nature he's a bit resistant if not contrary. It was the combination of all of the things working together that would best explain how he behaves under the demands and stress testing tasks.

Question by Ms. Meade: In terms of the improvements that Merlin had in his test scores over time, do you have an opinion based upon reasonable neuropsychological probability as

to what you attribute the improvements in the test to?

Answer by Dr. Cripe: Oh, yes. I do have an opinion regarding that. [3490]

Q. And what is it, sir?

A. Well, when you take these tests over a span of several years, there is some learning effect that occurs on the test. So perhaps some of that improvement is due to learning effects and familiarity with the task.

Q. In terms of where Merlin's performance deteriorated over time, do you have an opinion based upon reasonable, neuropsychological probability as to what the deterioration was attributable to?

Objection by Mr. Hollingsworth: Same objections, Your Honor?

Answer by Dr. Cripe: Well, I had --

Ms. Meade: Just a minute.

The Court: Just a moment, sir. Objection overruled to the question asked.

Answer by Dr. Cripe: Yes, I do have an opinion.

Question by Ms. Meade: What is it, Doctor Cripe?

A.: Well, it seems to me like this constellation of problems that he has, that is, who he is by nature, his psychological distress and his impairment of functioning all sort of interact so that under various conditions of stress and so forth, that he tends to deteriorate in his performance.

Q. Go ahead. Do you have something else to say? [3491]

A. No.

Q. What other observations do you have as to comparing the various test results?

A. Well, perhaps the major comparison or issue for me is when I gave him an intelligence test, the Wechsler Adult Intelligence Scale revised, he attained a full scale IQ of 76 which is the 5th percentile. In other words, out of 100 people picked at random in the population, four of them would be less smart than he and 95 of them would be smarter than he. So he scored quite low overall in his intellectual functioning as compared to the general population.

Q. Did you look at his school records from when he was tested as a child?

A. Yes, I did.

Q. And how did that compare to the intelligence tests that were administered to him by yourself and others?

A. He had been given an IQ test years ago as a youngster, and at that time had obtained an IQ score of 74. He wasn't given the Wechsler Intelligence Scale, so it's not an equivalent per se, but what that said to me is that years ago when he was a youngster and was given some type of measure of overall [3492] intellectual ability, that at that time he was also scoring somewhere in that 5th percentile range.

Q. If you have a low IQ, does that mean that you have neuropsychological impairment automatically?

A. No.

Q. Did you do a comparison of Merlin's neuropsychological testing to statistics as far as IQ?

A. Yes.

Q. Is that contained on table two and table three of Exhibit 132C?

A. Yes, it is.

Q. Okay. Why don't you explain why you were doing that.

A. Well, first of all, there's a bit of a problem making judgments about people's intelligence from Native American groups. If you give IQ tests to Native American groups, they don't tend to do as well as a group as mainstream caucasion America. It's believed that that's primarily due to cultural factors.

RP 3545: 12 to 3548:10

Question by Ms. Meade: In terms of his test results, what was the significance from a neuropsychological standpoint of him being below the expected performance on 60 percent of the test?

Answer by Dr. Cripe: It means that something is pulling the [3546] performance down. And now to determine what that something is requires the entire neuropsychological methodology which means it's going to include the history, the story of what happened, the symptoms right after, the

symptoms that have emerged over time, direct observations of the person, yes, looking at the test results as one part of this. And then analyzing this information in the context of all the knowledge or information that we have. So this told me that something is causing an impairment of performance in this young man that would not be expected in someone of a normal, nonneurologic population with IQ of 75. And then with the other data and looking more specifically at the tests in this evaluation, I started to make decisions about what functions are involved and what might be the pattern of things here and ultimately draw my conclusions about the presence and absence of brain dysfunction.

Q.: Did you form opinions based on reasonable neuropsychological probability as to the pattern of dysfunction this analysis showed?

A: Yes.

Q. Could you please tell us what they are?

A. What I ultimately concluded from analyzing all [3547] of the information is that Mr. Carlson demonstrates impaired brain functioning of more of a general nature. That is, it's not specific to one area of the system. And it is mostly affecting rate of processing and attentional process and memory. And so I ultimately said that it's my opinion in this case that Mr. Carlson is experiencing brain dysfunction.

Q. Now, you reviewed Merlin Carlson's history as far as how he was able to perform in work and school and socially before the clean-up in 1988; is that correct?

A. Yes, somewhat. I mean, I had some information regarding that.

Q. The pattern of impairment that you saw in light of his IQ, did you form any opinions based upon reasonable medical -- strike that. The pattern of impairment that you saw, did you form any opinions based upon reasonable neuropsychological probability as to whether that pattern had predated December of 1988?

A. Yes, I did form an opinion regarding that.

Q. And could you please tell us what your opinion is?

A. It's my opinion that this represents acquired brain impairment. And based upon the details of the [3548] history, this constellation of dysfunction did not exist prior to the exposure.

Objection by Mr. Hollingsworth: Objection, Your Honor. Move to strike, 702, 703, prior rulings.

The Court: Objection is overruled to this response. Please proceed.

Question by Ms. Meade: Doctor, did you do another comparison of the test results and IQ with Merlin Carlson?

Answer by Dr. Cripe: Yes, I did.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

DAVID SCHUDEL, et al., Plaintiffs'	)	
vs.	)	NO. CS-92-0081-FVS
GENERAL ELECTRIC COMPANY and KAISER ALUMINUM AND CHEMICAL CORPORATION, Defendants.	)	May 9, 1994 Trial ny of Edward Thatcher Beaty, Ph.D.

RP 3910-3912

Question by Ms. Meade: We'll get back to that.

Let's talk about the real life implications of your testing in terms of Merlin Carlson. Did you form an opinion based on reasonable neuropsychological probability as to whether your test results showed one way or another whether Mr. Merlin Carlson had brain impairment at the time of the testing? [3911]

Answer Dr. Beaty: Yes, I did.

Q. And tell the jury what your opinion is?

A. My opinion is that at the time I evaluated him, Mr. Carlson demonstrated clear indications of having a brain injury.

Q. Doctor Beaty, as far as the impairment that you saw with Mr. Carlson on your testing, based upon the school records that you have seen, have you formed any opinions based upon reasonable neuropsychological probability as to whether those same impairments would be manifested in Merlin Carlson's school work?

A. Yes, I have formed an opinion.

Q. Could you please tell the jury what your opinion is?

A. Okay. My opinion is that going into this situation, Mr. Carlson was functioning at a very low level of ability. But as a result of what happened to him, that level has declined significantly, and it has significant implications for his

real life functioning.

Q. In terms of Mr. Carlson's real life functioning, did you identify areas of problems that he would have?

A. I have identified them, yes.

Q. Why don't you tell the jury in your own words what your real life assessment is. [3912]

A. Based on my evaluation, my opinion is that Mr. Carlson will never be able to live independently. He will never be able to live on his own. He will always need to be either with someone to live in a sheltered environment. So he does not have independent living abilities. Secondly, I don't think he'll ever be able to hold down a job in what I call the competitive working environment. He'll never be able to work again. Thirdly, my opinion is that he is not competent to manage his own affairs, either his legal affairs or his financial or his health affairs. And I think he needs some guardianship arrangement to help him in assisting in his affairs.